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ORIGINAL ARTICLES

SKIN DISEASES IN AN INDUSTRIAL CLINIC*

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SKIN diseases, with respect to their industrial etiology, have, heretofore, been studied largely in Skin Clinics. It was therefore thought worth while to discover what the incidence of diseases of the skin might be in a purely industrial clinic. Accordingly, a study was made of the skin cases, 532 in number, coming to the Industrial Clinic at the Massachusetts General Hospital, Boston, from February 1, 1922, to January 10, 1925. During that period, 79,074 patients applied to the Out-Patient Department 4870 of whom were seen by or referred to the Industrial Clinic. One patient in sixteen was sent to this Clinic and only one in nine of the cases sent, was affected with a skin disease. This relatively small proportion can be explained by the fact that housewives, who constitute a large proportion of the cases treated in the Skin Clinic, are not referred to the Industrial Clinic and many other patients are omitted also because their diseased conditions do not seem to be related to industrial employment. (See Table I.)

TABLE I.

SHOWING THE RELATIVE PROPORTION OF SKIN CASES IN THE INDUSTRIAL CLINIC OF THE MASS. GENERAL HOSPITAL—FEBRUARY 1, 1922 TO JANUARY 10, 1925.

Hospital Department	Number	Percent
Entire Out-Patient Department	79074	100.
Industrial Clinic	4870	6.15
Skin Cases of Industrial Clinic	532	.67

The 532 cases observed were classified by one of the physicians to this Clinic, Dr. Brady, and one of the visiting physicians to the Skin Clinic, Dr. Greenwood, according to the types and causative factors of the diseases.

The first classification was divided into twelve groups. (See Table II.) The first general group of 196 cases, covered all cases diagnosed as dermatitis, "irritation of the skin" and eczema, "chronic inflammatory condition of the skin", the nature of which was debatable and the picture presented variable.

*From the Industrial Clinic at the Mass. General Hospital.

The second group of 77 cases, in which the diseased condition was due to pyogenic bacteria, included acne, furunculosis, folliculitis, impetigo, sycosis, and granuloma.

TABLE II.

SHOWING THE IMPORTANCE OF THE DIFFERENT SKIN DISEASE GROUPS OBSERVED IN THE INDUSTRIAL CLINIC OF THE MASS. GENERAL HOSPITAL. FEBRUARY 1, 1922—JAN. 10, 1925.

Disease Group	Patients in specified disease groups	
	Number	Percentage
Total	532	100.
Dermatitis-Eczema	196	36.
Acne, Furunculosis, Folliculitis, Impetigo, Sycosis, Granuloma	77	14.
Tinea, Epidermophytosis, Mycosis, Intertrigo	57	10.7
Psoriasis, Lichenplanus, Pityriasis rosea	49	9.2
Vitiligo, Alopecia, Herpes	26	4.8
Zoster, Neurodermitis	24	4.5
Urticaria, Erythema	20	3.8
Scabies	19	3.6
Keratosis, Epithelioma, Verruca	17	5.4
Seborrhoea	15	3.
Pruritis, Prurigo, Pernio	11	2.
Double diagnosis	21	4.
Miscellaneous		

A fungus was responsible for the 57 cases of the third group, composed of tinea, epidermophytosis, mycosis, and intertrigo.

Of the fourth group, the causative agents were unknown, but psoriasis, lichen planus, and pityriasis rosea presented sufficient gross similarity to be grouped together. There were 49 cases in this group.

The 26 cases of the fifth group were also due to unknown agents, but the cases such as Vitiligo, alopecia areata, and herpes zoster, which are in it, have, perhaps, a nerve origin.

The cases of urticaria and erythema, classed in the sixth group of 24 cases, were caused largely by internal toxic agents. The seventh group of 20 was composed of scabies cases.

The eighth group of 19 cases had an unknown cause. It included keratosis, epithelioma, and verruca.

The ninth group of 17 cases consisted of various forms of seborrhea.

The tenth group of 15 cases was due to many causative agents and was made up of cases of pruritus, prurigo, and pernio.

The last two groups, eleven and twelve, covered the cases which presented two different diagnoses, 11 cases in all, and the miscellaneous cases (21 cases) that is, 3 varicose ulcers, 1 trophic disturbance of nails, 1 tuberculosis verrucosa, 1 hyperidrosis, 1 keratosis exfoliativa, 1 cyst of the right eye, 1 telangiectasis, 1 staphylococcus infection, 1 morphea, 1 erythrasma, 4 cases of lupus erythematosus, 2 due to insect bites, 2 sebaceous abscesses, and 1 syphilis.

The first group is very large because it is composed of all the cases of indefinite character

one year and less than five years, ninety-three had served five years and less than ten years. The other groups were very small. As we studied more closely the distribution of cases, when the diseases were contracted with less than five years of service, we found that the greatest number (86) occurred during the first nine months. In some cases, like scabies, no connection with industrial factors could be found. In others, the relationship could not be determined exactly, but the fact that the largest number of cases occurred during the first nine months of service suggests that, during the period of adaptation, the worker may have been easily tired and more subject to infection. (See Table III.)

One hundred and forty-seven of the 532 cases

TABLE III.

SHOWING THE APPROXIMATE PERIODS OF SERVICE OF LESS THAN 1 YEAR DURATION, BEFORE PRESENT CONDITION OCCURRED, REPORTED BY INDUSTRIAL CLINIC OF THE MASSACHUSETTS GENERAL HOSPITAL. FEBRUARY 1, 1922 TO JANUARY 10, 1925.

Disease Group	Number of Patients in Specified Disease Groups Having Served for Stated Periods						
	Total	1 mo. & less than 1 month	3 mos. & 3 months	6 mos. & 6 months	9 mos. & 9 months	12 mos. & less than 12 months	
Total	91	11	22	30	23	5	
Dermatitis, Eczema	28	4	5	11	7	1	
Acne, Furunculosis, Folliculitis	16	1	5	7	3		
Impetigo, Sycosis, Granuloma, Tinea, Epidermophytosis, Mycosis, Intertrigo	10	1	2	2	5		
Scabies	8	1	2	2	3		
Vitiligo, Herpes Zoster, Alopecia, Neurodermitis	6	1		2	2	1	
Urticaria, Erythema	6	1	2	3			
Psoriasis, Lichen planus, Pityriasis rosea	5	1	3			1	
Pruritus, Prurigo, Pernio	3			2		1	
Keratosis, Epithelioma, Verruca	2				1	1	
Seborrhea	1		1				
Double Diagnosis	4	1	2	1			
Miscellaneous	2				2		

—more than one-third in all. It includes nearly all the cases of industrial origin. As for the 109 cases where the causative factor was unknown, but which presented an appearance characteristic enough to be diagnosed, we see that, at the present time, a large proportion cannot be definitely caused by an industrial factor.

Where the groups were thought to be industrial in origin special effort was made to discover the relation between the disease and the occupation. The period of service in the occupation in which the patient was engaged was investigated. The different occupational groups found in the Industrial Clinic and the relation of these groups to the various cases of skin disease which appeared were also investigated. The period of service before the disease occurred was investigated as will be shown by an analysis of the 147 cases of industrial origin.

Great variations were reported in the period of service prior to the development of the diseased condition while engaged in the various occupations. Ninety-one patients had served less than one year, one hundred and sixty-nine had served

were selected as having a definite occupational origin. Their classification in the different occupational groups shows the great predominance of manufacturing and mechanical industries with 105 cases as compared with 19 cases in the domestic and personal service. This is readily explained since only industrial workers are sent to the Clinic, and the manufacturing and mechanical industries of Massachusetts give employment to its largest group of wage earners. The distribution would probably differ if it had been taken in another part of the country.

In these 147 cases, in which the periods of service in the occupations where the diseases occurred resembled the distribution in the general group, sixty-eight persons, that is 46.25% reported that they had served less than five years, and among them twenty-two or 15% had served less than one year. It did seem worth while to obtain some insight into the causative factors of these 147 cases of industrial origin. (See Table IV.)

The largest occupational group is the one formed by domestic servants, cooks, laundress-

es, waiters and waitresses, barbers, porters, etc., which includes 19 cases and diagnoses are as follows:

Paronychia	3 cases
Epidermophytosis	4 cases
Eczema	6 cases
Dermatitis	6 cases

All these workers are exposed constantly to hot water, soap and cleaning powders, as well as to the macerating and softening effects of steam and hot water. The protecting fat of the skin is withdrawn, the horny layer removed, and the skin develops various irritated and diseased conditions. These are usually localized

ite factor in the production of eczema among chocolate dippers and continuous contact with sugar also may be injurious to the skin.

The machinists (9 cases) presented more variety in diagnosis; they include furunculosis (1 case), paronychia (1 case), eczema (2 cases), dermatitis (4 cases). They were exposed to oil and dust, but the real cause was not definitely established.

The painters (8 cases) included 1 case of epidermophytosis, 4 of eczema, and 3 of dermatitis. This group has been the subject of many studies because of the frequency with which lead poisoning occurs. In that occupation, the main skin affecting elements are dryers like

TABLE IV.

SHOWING THE APPROXIMATE PERIODS OF SERVICE, BEFORE PRESENT CONDITION OCCURRED, REPORTED BY 147 INDUSTRIAL WORKERS IN THE DIFFERENT OCCUPATIONAL GROUPS OF THE INDUSTRIAL CLINIC OF THE M. G. H. FEBRUARY 1, 1922—JANUARY 10, 1925.

Occupations	Total	Number of Patients Serving in Specified Occupations for Stated Periods					Not Recorded
		Less than 1 year	1 yr. & less than 5 years	5 yrs. & less than 10 yrs.	10 yrs. & less than 15 yrs.	15 yrs. & over	
Total	147	22	46	27	18	30	4
Bakery	14	3	2	2	1	5	1
Shoe Factory	13		2	1	5	5	
Candy, Chocolate	10	2	5	3			
Machinist	9		4	1	2	2	
Painter	8	1	1	2	2	2	
Textile & Paper	8	1	2	3		2	
Tannery	7	1	3	2		1	
Building	7		1	1		4	
Packer	6	3	1	1	1		
Anilin dyes	6	1	2	2	1		
Nickel Plating	5	1	2			2	
Naphtha, Benzene	4	1	2			1	
Rubber factory	3	2	1				
Printing	3				2	1	
Furniture	2	1		1			
Housework, Laundry	19	1	7	5	1	3	2
Gardener	4	2	1			1	
Fisherman, Seaman	4		3			1	
Stone Mineral	3		1		2		
Blue Printer	3	1	1	1			
Miscellaneous	9	1	5	2			1

on the hands and arms because of the more frequent exposure of these parts, but they may be found also on the lower legs because of standing position, and on the face where it is exposed to hot water and steam.

The bakery group includes 14 cases of which 6 were eczema and 8 dermatitis, which were exposed to flour, heat, sugar, and salt. Flour produces an inflammation very definite in character called "baker's itch". In the shoe factory group of 13 cases, we found 4 persons with epidermophytosis, 4 with eczema and 5 with dermatitis. In the shoe industry there were several possible causative factors such as wax dust, naphtha, cement, oils and aniline colors in the shoe paste. Wax has been suspected of producing cancer in some cases, but there were none such found in this Clinic.

The candy and chocolate industries furnished 10 cases; 1 of epidermophytosis, 5 of eczema and 4 of dermatitis. Chocolate is a very defin-

turpentine, benzol, alcohol, gasoline, and cleaning agents like lye, oxalic acid, strong soap, and the constant use of water.

Textile and paper industries provided 8 cases; 2 of epidermophytosis, 2 of eczema, 1 of acne seborrhoea and 3 of dermatitis. We have in that group examples of people sensitive to the chemical action of wool, cotton, and wood pulp. This has not, however, been studied to any great extent until recently.

The tanneries furnished 7 cases; 1 of epidermophytosis, 2 of eczema, and 4 of dermatitis. These workers were exposed to leather dust and tanning agents such as chrome salts, arsenic, lime, and sulphides.

Building trades presented 7 cases; 1 of eczema, 5 of dermatitis, and a case of trophic disturbance of the nails, which, according to the record, might be due to arsenic. The others were exposed mostly to dust and grease.

The packers group (6 cases) included 1 case

of epidermophytosis, 1 of eczema, and 4 of dermatitis. The dust from hay and excelsior had irritated their skin. Two men reported that they had trouble when packing with hay, but could use excelsior with no bad results.

The aniline dye industry presented 6 cases; 3 of eczema, and 3 of dermatitis. The aniline dyes produce a chronic skin irritation in certain individuals, and in some cases it may produce cancer.

The nickel plating industry formed a group of 5 cases; 2 of epidermophytosis, 2 of dermatitis and 1 of eczema. They were exposed to cyanides, strong alkalis, and nickel salts.

A group of 4 cases all of dermatitis had suffered from continuous contact with naphtha and benzine. The fishermen and seamen formed a group of 4 cases; 1 of epidermophytosis, 1 of anyehomycosis, 1 of eczema, and 1 of dermatitis. The only common skin affecting factor we could find was salt water. The gardeners furnished 4 cases; 1 of epidermophytosis, 1 of eczema and 2 of dermatitis. They were exposed to sprays, water, weather, and in some cases, irritating factors from various plants.

From the rubber industry, came 3 cases of dermatitis. The affecting factor is mostly dust. In some cases, hexamethylenamine has given rise to skin trouble by setting free formaldehyde under certain acid conditions, but no such case has been recorded in this Clinic.

The printing industry has given 3 cases; 1 of epidermophytosis and 2 of eczema. These patients were exposed to oil, kerosene and naphtha when cleaning the presses. Stone-cutting

and mining presented three cases; 2 of eczema and 1 of dermatitis, probably due to the stone and mineral dust. The blue printers (3 cases of eczema) were exposed to iron and bichromate salts. They did not have any definite chrome ulcers but had severe dermatitis. From the furniture industry came only 2 cases; 1 of epidermophytosis and 1 of dermatitis. They were exposed to shellac and alcohol.

The last 9 remaining cases, 1 of epidermophytosis, 3 of eczema, and 5 of dermatitis, were grouped under the heading miscellaneous as they belonged to different industries and had been affected by various factors.

SUMMARY

This survey reveals that (1) during the 3 years studied, only 1 in 9 of the patients coming to the Industrial Clinic presented skin disease conditions, (2) the largest group of these, more than one-third, were diagnosed as dermatitis and eczema, (3) eighty-six persons or one-third of the cases considered had been engaged less than nine months in the occupation they reported at the time the disease occurred, (4) the summary of causative factors recognized as contributing to the diseased condition showed 147 cases to be of recognized industrial origin, except, possibly, the 21 epidermophytosis cases which were scattered through the different groups, (5) if employers and workers were better acquainted with the various occupations which can produce diseases of the skin, precautions might be taken which would enable wage earners to escape the discomfort and even incapacity which often results.

ADDISON'S DISEASE—WITH REPORT OF CASES*

BY WILL HOWARD SWAN, M.D., AND LEO WILLIAMS BORTREE, M.D.

It is not the intention of the authors to enter into an extended discussion as to the history, etiology, symptoms, pathology, etc., of Addison's Disease. Instead we should prefer to review the cases we have seen in our private practice in Colorado Springs, and from this small list attempt to draw some conclusions.

Since it is well recognized that the most frequent of all lesions producing this symptom complex is tuberculosis of the suprarenal bodies, one would naturally assume that the disease would be more frequently met with in regions where the antecedent infection is most common. In Colorado Springs there is an unusually large percentage of the population who have, or have had, clinical tuberculosis or who have been exposed to members of their families who are tuberculous.

Reviewing the Census statistics for the ten years 1912 to 1921 inclusive, we find that the

death rate from Addison's Disease remained almost constantly 0.4 per 100,000 population for the registration area of the United States. During that same period the death rate from Addison's Disease in Colorado Springs averaged 1.2 per 100,000 population or about three times the rate in the country at large. This finding is one we should naturally expect in a community devoted extensively to the treatment of tuberculosis.

In our private practice we have treated seven patients with Addison's Disease, and it is on this series we should like to make a report. Unfortunately some of the cases were seen prior to the day of clinical sphygmomanometry, and in two of the cases the records have become lost so that the report is not as complete as we would have liked.

Addison's Disease is more prevalent among males than females in the proportion of two to one, but in our series there were four males and three females. The youngest patient was four-

*Read before the American Climatological and Clinical Association at Washington, D. C., May 9, 1925.

teen and the oldest seventy, the average age being forty two.

Since the majority of all our patients have or have had clinical tuberculosis, it is not at all surprising that in this series all but two of the patients had been treated for some form of tuberculosis from two to thirty years prior to the onset of the Addisonian symptoms. The two who had not been previously diagnosed tuberculous were the youngest of the series. The younger had no known exposure to tuberculosis and had lived in Colorado all her life save one month spent in Kansas at the age of five. The other had been intensively exposed to infection from his mother from his birth to the age of four when she died of pulmonary lesions. He had shown no signs of the disease although he had been repeatedly examined on account of the early history.

The onset was gradual in all but two of the cases. In these the history was apparently confined to one month, being of the fulminant type. The first symptom noted in four of the cases was asthenia, but in two other cases the presence of active tuberculosis doubtless masked this finding. In the latter cases the development of pigmentation and gastro-intestinal symptoms attracted attention to the diagnosis.

In all cases there was pigmentation of the skin and mucous membranes. In all but one case this was progressive during the course of the disease, in this latter fading of the pigmentation following glandular therapy was definite, but bore no relation to the other symptoms of the disease which were progressive to the end.

Blood counts were done on three of the cases and in none was there found any alteration of the findings beyond the normal limits. The youngest patient had been said to be anaemic, but had a haemoglobin of 95% when seen by us. No other patient showed an anaemia.

Hypotension was found in all cases save one of the eldest, a man of seventy, who had a pressure of 110 to 120 systolic during the period of observation. The lowest pressure recorded in the series was 68/36.

Some disturbances of the gastro-intestinal tract was observed in every instance, nausea and vomiting being the most often noted. Diarrhoea was less frequent. Three of the seven complained of upper abdominal and lumbar pain, but this did not seem to be of great severity.

In all but one case there was an attempt made at some form of substitution therapy, either orally or hypodermically. In only one case, however, did there appear to be any marked relief. In the other cases the effect was either absent or so slight that it was negligible. In one case the use of any form of suprarenal substance seemed to accentuate all the symptoms, whereas pitui-

tary extract apparently alleviated them. In the severer cases nothing that was tried showed the least effect in abating the symptoms.

The duration of the symptoms varied from two to twelve months, the average being seven months. Since the average duration of the disease is two to three years, the cases in this series were apparently of unusual virulence, especially since three of them had a duration of less than three months.

We were able to secure autopsies in three of the cases. All of them showed virtually complete destruction of the suprarenal bodies by tuberculous lesions. In one of the younger patients there was also found a marked hypoplasia of the heart and genital anomalies.

After reviewing the case histories it was impossible to draw any conclusions as to the part played by antecedent infection, save tuberculosis. One case dated the onset of the asthenia to the after effects of an accidental injury to the back received eight months prior to death.

It has appeared to us that, since the asthenia, hypotension and gastro-intestinal symptoms are so frequently manifested in cases of tuberculosis that have never been diagnosed as Addison's Disease, it is highly possible that in such cases there is an associated lesion of the suprarenal bodies. In cases showing these symptoms it is well that one should consider the administration of some form of suprarenal therapy. Such therapy has been of aid in some cases known to the authors. Since the administration of insulin has apparently resulted in repair of the glycolytic power of the pancreas in some cases, might not the administration of suprarenal substance in weakened cases aid in the prevention of a later developing Addison's Disease, as well as offering the possibility of an additional aid to recovery.

Many men are inclined to make the diagnosis of intestinal tuberculosis in cases of pulmonary tuberculosis where there is an associated gastro-intestinal weakness. Might not some of these cases be due rather to a lesion of the suprarenals, and that possibility be considered before the use of restricted diets, X-ray therapy, etc.? It is possible that many such cases are overlooked by us owing to the alleged rarity of this lesion.

Tuberculous involvement of the suprarenal glands is, however, not as rare as we are wont to believe. Franz Schwartz in "*Zeitschrift für Tuberkulose*," 1922, Bd. 37, Heft 4, states that in 19,061 autopsies performed in Prague by Ghon, tuberculous involvement of the suprarenal glands was demonstrated in sixty-five instances or 0.4% of all cases. Of these 19,061 cases about 2,700 had Tuberculosis ascribed as the cause of death. If we compute the percentage on this number it is found to be 2.4%.

In generalized miliary tuberculosis Schwartz has found the incidence much higher. Twenty

cases of generalized miliary, and Tuberculous meningitis with miliary tuberculosis showed lesions of the suprarenal glands in seventeen or 83%. Many of them were not macroscopically involved and the lesions were only demonstrated by careful serial sectioning.

It is of interest to note that in none of the sixty-five cases from Ghon's Institute was tuberculosis of the suprarenal bodies the only focus found. In all cases it was possible to demonstrate other lesions of tuberculosis in the body.

In some cases reported the form of substitution therapy used was apparently only the injection of the suprarenal extract. Since both the cortex and the medulla of the gland are equally affected and since the extract is produced only by the medulla, the use of the latter would apparently be not a complete form of substitution therapy. It were more logical to use the whole gland in the form of the dried substance, fortified in addition if desired by injection of epinephrin.

Since this is an incurable disease under the present conditions there is little that we can do to aid the patient save in the way of symptomatic measures. It would seem better to do what lies in our power to prevent the development of the disease by treating the symptoms as they arise in a case as if there were some form of lesion present in the suprarenal bodies, i.e., by substitution therapy.

The following is a synopsis of the records of the seven cases seen in this series.

1. Record lost. Male. 65. Came to Colorado because of tuberculosis. Practically well and active as a lawyer for fifteen or twenty years. Gradual onset of asthenia, anorexia, indefinite digestive disturbance, particularly nausea. After two or three months pigmentation of skin and mucous membrane. Before the days of taking blood pressure. Died after being in bed some weeks. No autopsy.

2. J. R. F. 41. S. Seen October, 1903. Former history T. B. Colorado seven years, tuberculosis, apparently arrested. Three months asthenia, anorexia, menorrhagia, edema. Lungs negative. Pigmentation marked and progressive. Menorrhagia relieved by adrenalin. Pain in chest and arms. Dyspnoea marked. Urinary suppression. Autopsy showed tuberculous suprarenal glands.

3. R. H. L. F. 31. Married. T. B. family history. Tuberculous osteitis hand. Pulmonary lesion present. Onset nausea and diarrhea three months before death. Pigmentation developed only last month, none on mucous membranes. Autopsy: both adrenals much enlarged and hard. Areas cheesy softening. Lungs: old dry cavity left apex, recent area left base.

4. E. M. D. M. 70. Mine manager. Seen June, 1917. Potts' disease many years before. Twelve or fourteen years before resection ribs account tuberculosis. Well till three months before. Onset: loss of weight, asthenia, pigmentation, pain right upper abdomen, right shoulder. Vomiting following smoking. Lost ten to fifteen pounds. Pigmentation marked. B. P. 120/100. Rales left axilla and right front apex. Blood: Hb. 95%, Reds 4,500,000, Polys. 40%, Monos. 52%, Eos. 7%. Stools: no parasites or eggs. One month later Hb. 105%, Reds 5,500,000, Whites 4,800, Polys. 50%, Monos. 47%, Eos. 3%. Urine: few hyaline casts. Diarrhea profuse at onset. Died September, 1917. No autopsy.

5. E. T. M. 18. Student. Seen May 1, 1921. Mother died, 34, T. B., when patient was four years old. July, 1920, accidental injury back, slow recovery. May 1, 1921, fainted, vomited, stuporous. History increasing pigmentation two months. Chest negative. B. P. 90/54. Suprarenal therapy increased vomiting, pituitary extract relieved symptoms and pigmentation lessened following its use. Urine showed finely granular casts. Red count 6,112,000, Whites 6,900, Polys. 50%, Small Monos. 35%, Large Monos. 14%, Trans. 1%. B. P. fell to 66/25. Abdominal pain. Died in coma May 25, twenty-five days following development of acute symptoms. Autopsy: lungs grossly negative. Heart very small, about two-thirds usual size. Right suprarenal 3x6 cm., necrotic, many calcareous nodules present. Left 4x8 cm., same condition, both tuberculous. Right testicle undescended in inguinal canal.

6. M. L. F. 14. Student. No known exposure. Born in Colorado, lived here continuously except one month when five years old, spent in Kansas. Seen November 27, 1921. Gradually increasing pigmentation one year following tonsillitis. Five weeks ago given toxin antitoxin followed by nausea, vomiting and diarrhea. Marked asthenia. Temperature subnormal. Pigmentation marked on skin and mucous membranes. B. P. 68/40. Lungs: no signs. Urine: albumin and casts. Blood: Hb. 95%, Reds 5,980,000, Whites 8,200, Polys. 71%, Small Monos. 19%, Large Monos 4%, Eos. 5%, Baso. 1%. Died December 30, 1921. Delirious last thirty-six hours. No autopsy. Tried desiccated suprarenals, no effect.

7. W. Record lost. F. 50. M. History tuberculosis quiescent many years. Onset: gradual loss of weight, increase pigmentation nausea and vomiting during three months. B. P., systolic 80 to 90. Gland therapy attempted without effect. Pain upper abdomen. No autopsy.

MODERN COD LIVER OIL AS A SOURCE OF FAT SOLUBLE VITAMINS

BY ARTHUR D. HOLMES, PH.D.

Cod liver oil has been used for therapeutic purposes for centuries and until very recently it has been an extremely crude product. In general, it was separated from the liver tissues by allowing the livers to decompose until the tissues had weakened to such an extent that the oil was released from the liver cells. Then on account of its lower specific gravity, it rose to the surface and was removed by skimming. Such oil is now called "rotted oil" and appears in the trade as "Cod oil," being widely used in

the leather industry. Oil prepared from livers undergoing decomposition is ordinarily of a dark color, rather viscous and of a decidedly nauseating odor and taste. The undesirable odor and taste are due to a number of secondary products such as butylamine, amylamine, hexylamine, and dihydrolutidine, which may be produced by decaying cellular matter.

During the long period that oil of this nature was used for therapeutic purposes, many theories were developed concerning its therapeutic

value. Its virtue has been ascribed to its phosphorus or iodine content, to the unusual fatty acids that were liberated during digestion, and to its value as a source of energy. At the present time, however, it is believed that cod liver oil is largely of value as a source of the essential fat-soluble vitamins. As a consequence of this conclusion, the old rule-of-the-thumb process for the production of cod liver oil was soon replaced by methods developed by science.

This change was in no small measure hastened by investigations which showed that the vitamin potency of cod liver oil was influenced materially by the nature of the manufacturing process. Obviously, many manufacturing processes were studied, and as a consequence of numerous investigations, a thoroughly modern process has been developed. This involves the use of steam kettles, specially designed separators, brine cooled presses, and other equipment designed particularly for the manufacture of medicinal cod liver oil. Thus it is now possible to produce cod liver oil of a light yellow color, of low free fatty acid content possessing a wholesome odor and flavor and possessing a high vitamin potency.

Investigations have shown that the vitamin content of cod liver oil varies over wide limits¹ and that American cod liver oil has a higher potency than Norwegian oil. Doubtless many factors contribute to the difference in vitamin potency between American and Norwegian cod liver oil, but many people believe that the higher potency of American oil is due in no small measure to the fact that in America cod fishing continues throughout the entire year, whereas in Norway, cod fishing is largely confined to the spawning season. It has been estimated² that the ovaries of a 21-pound cod contains 2,700,000 eggs. It is reasonable to suppose that Nature has provided all of these eggs with every essential, including vitamins, necessary for maintenance and development until the new individual has established its dietary regime. Consequently, it is perfectly reasonable to assume that during the active stage of the reproductive cycle, the store of vitamins in the liver is materially withdrawn by the developing ova.

Early in the testing of various materials for their vitamin content, it was found that cod liver oil was the richest natural substance in vitamin A and vitamin D. Whether it contains vitamin E is still an unsettled question. The role and value of vitamins A, D, and E may be summarized as follows:

Vitamin A is antiphthalmic, is required for growth and maintenance, serves to increase the body's resistance to bacterial infection³ with pneumococcus, anthrax bacillus, and other pathogenic organisms (very recent evidence indicates that cancer⁴ may result from diets low in vitamin A), and reduces the possibility of bacterial invasion of the mucous membranes of the ear and nasal cavities⁵. Vitamin D is antira-

chitic and is essential for all young, both human and animal (the continued use of diets low in vitamin D cause faulty bone formation as evidenced by rickets, by caries, by poor tooth structure, and by that portion of defective hearing⁶ due to poor ear bone development). Vitamin E, sometimes called the fertility vitamin, is essential for normal reproduction (its economic importance to poultrymen and stock raisers is evident).

For at least two or three hundred years, cod liver oil has been recognized as of particular value in the treatment of rickets. The results of numerous clinical studies combined with the results of many investigations of experimental rickets supply conclusive evidence that vitamin D is antirachitic and necessary for normal calcium and phosphorus deposition. Thus we have an explanation of why cod liver oil may be considered as a specific for rickets.

Recently it has been shown that rickets may also be satisfactorily treated by the use of sunlight or ultra-violet light. This observation raised the question as to how two such unlike substances as cod liver oil and ultra-violet light could apparently accomplish the same result.

One theory developed to account for this phenomenon assumed that cod liver oil must contain radiant energy similar to that of ultra-violet light. The report of Kugelmass and McQuarrie⁷ that they had detected emanation of ultra-violet light from cod liver oil seemed to substantiate this theory. Unfortunately, for this theory, a number of investigators⁸ working at widely different points were unable to detect ultra-violet radiation from cod liver oil and recently⁹ the original report has been retracted. Accordingly, the similarity of cod liver oil and ultra-violet light as regards antirachitic activity does not seem to be accounted for by the theory of radiant energy.

At the present time there seems to be considerable evidence that their similar activity is to be explained on the basis of chemical action. It has been shown that when cholesterol is irradiated with ultra-violet light, it acquires antirachitic activity. Since human fat is rich in cholesterol and is found in the skin, one naturally inquires whether the same reaction that has taken place in vitro between cholesterol and ultra-violet light producing antirachitic activity can take place in the skin when it is exposed to ultra-violet light. Theoretically, this is possible, for Maecht, Bell, and Elvers¹⁰ recently have shown that the long ultra-violet rays will pass through living white human skin providing it is not exceedingly thick.

To test this theory, Hess¹¹ fed rachitic rats irradiated and non-irradiated calf skin and found that the non-irradiated was not effective and the irradiated cured the rachitic condition. The next step obviously was to repeat the experiment with irradiated and non-irradiated human skin and like results were obtained. It,

therefore, would seem that the cholesterol of human fat residing near the surface of the body undergoes the same chemical transformation when acted upon by ultra-violet light as that taking place in vitro when pure cholesterol is irradiated by ultra-violet light.

Such evidence obviously aroused keen speculation as to the chemical nature of the antirachitic vitamin. A number of investigators found that oils containing cholesterol or phytosterol but exhibiting no detectable antirachitic value will develop antirachitic potency when subjected to irradiation with ultra-violet light. It may be noted that cod liver oil which is the richest natural source of vitamin A and vitamin D is also one of the richest sources of cholesterol. Also it has been shown that if cod liver oil is saponified, its antirachitic value will be found not in the soap nor glycerine, but in the unsaponifiable portion which is exceedingly rich in cholesterol. In view of these findings, the question arises, does cholesterol possess antirachitic value?

Hess¹² has shown that pure cholesterol when fed to rachitic rats does not improve their condition. Steenbock¹³ has precipitated cholesterol from cod liver oil by digitonin and subsequently found that the oil retained its antirachitic potency. Zucker and co-workers¹⁴ also conclude that the antirachitic substance in cod liver oil is not cholesterol, although like it in solubilities. These results indicate that cholesterol is not the antirachitic substance in cod liver oil, but that vitamin D is evidently a definite chemical substance of sterol nature present in the unsaponifiable portion of cod liver oil and very likely associated with cholesterol.

Quite definite information is now at hand regarding the chemical composition of vitamin A. This has been separated from cod liver oil, spinach, and other sources by Takahashi¹⁵, who has made an exhaustive study of its composition and reactions. By saponifying a highly potent cod liver oil and subsequently separating the constituents of the unsaponifiable portion a substance was obtained which represented 0.1% of the original oil. This he named Biosterin. It was found impossible to purify this by crystallization, but purification was accomplished by distilling under pressure. At 147°—150° a 30% yield of the original substance was obtained in an apparently pure form. The composition of this was found to be $C_{27}H_{44}O_2$. In a study of the nature of the oxygen grouping, it was found that this was neither an aldehyde nor ketone grouping, but rather the oxygen atoms occurred as hydroxyl groups, one of which reacted as a tertiary alcohol. Biosterin reacted with acetic and benzoic aldehydes and with phosphorus pentachloride. It produced definite color reactions. When fed under definite experimental conditions as regards experimental animals, ration, and labora-

tory procedure, it was found to have a potency such that 0.001 to 0.005 mgms. daily sufficed to meet the vitamin A requirements of young albino rats. A larger amount 0.015 mgms. daily was required to effect recovery in laboratory animals suffering from not too severe vitamin A malnutrition. When injected hypodermically, a 0.125 gm. dose was found to be fatal in two hours. The fatal dose is thus something like 10,000 times the nutritional requirements.

In the practical use of vitamins A and D either as a constituent of the daily diet or for therapeutic treatment of nutritional diseases, it should be remembered that cod liver oil is without an equal as a source of these two vitamins. Sunshine and ultra-violet light when properly applied (an overdose has detrimental results) possess definite antirachitic value, but neither sunshine nor ultra-violet light have been shown to have any vitamin A value. Also those oils that have acquired antirachitic activity from being exposed to ultra-violet light are not comparable with good cod liver oil as a source of vitamin A if indeed they are comparable with it as regards vitamin D.

In general, our present information indicates that the long therapeutic use of cod liver oil is justified and explained on the basis of its high content of vitamins A and D, that with the assistance of science it is possible to produce a palatable cod liver oil possessing high vitamin A and D content; that these vitamins are definite chemical substances, and that at least one of these may be produced by the action of ultra-violet light on cholesterol, phytosterol, and possibly other sterol-like substances. With this information available as a basis for future work, it is indeed probable that there will be a rapid accumulation of data in this most interesting field of investigation.

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THE NEW ENGLAND HOSPITAL ASSOCIATION

ROUND TABLE DISCUSSION*

(Continued from Page 683)

A MEMBER: I would like to ask about the question of taking a complete history of a nurse—whether that should be done.

DR. GEORGE H. STONE: Question 23 will be taken up tomorrow.

Question 24—Should long outstanding accounts be placed in the hands of a collection agency?

A MEMBER, Fall River: A patient entering a hospital is of one of three classes:—private and perfectly well able to pay for the service they ask; and the one who can only pay part; and the third who can pay nothing. It should be made a thorough business proposition with the patient who can pay, and they should make satisfactory arrangements when admitted to pay for the accommodations. If their standing in the community is of such a nature, you may wait for their pay. If there is a question and they have been in before and haven't paid, the question ought to be gone into, and they should be asked why they take a twelve dollar room and not a five or six dollar room when they didn't pay previously. That applies to the patients of whom you have a record. The patient who can only pay a part should be willing to discuss the question with the proper details and should be willing to go into details why they can't pay, and then if cheaper accommodations are accorded them, they should state how they can pay and make a definite promise and made to keep it. Those two classes take in this question, but as to charity patients there is no question about that. If you have a definite policy, the patient will not come back and explain why there should be an exception to the rule.

Statements are rendered each week with a request to pay it carefully printed on the bill with the terms of the hospital, and upon being discharged they are either presented with a bill or it is mailed on the day of discharge, and then they are given 30 days and then sent a letter calling attention to them to pay in 15 days, and if no response is obtained, another letter goes which is 45 days after discharge, and if there is no response to that, at the end of 60 days there is another letter, and at the end of 90 days there is a letter signed by a legal firm and mailed and the account is taken from the file and sent to the legal firm for collection, and invariably that brings good results. We have but one paying patient at the hospital that was two weeks behind on the bill.

A MEMBER: I think the gentleman has de-

*Read at the Fourth Annual Meeting, May 13 and 14, 1925, at the Hotel Bancroft, Worcester, Mass.

scribed a very efficient business organization, but in our hospital I have always been opposed to the placing of the collection of money for the care of the sick. I don't think you can have any such system of rules which he has been able to carry out successfully in his hospital. I know we couldn't have it in ours. I like to think of a hospital along professional lines which puts the question of the sick ahead of the question of business, and I don't believe a hospital can be conducted along these strict business lines. It wouldn't be a hospital, it would be another organization if you put the rules of business management so far ahead of the ability of people to pay. The experience in our hospital is that by continually sending bills to them very often bills are paid months after the bill was contracted, and I think that is the general rule, and I think that if you undertake to insist upon such business management, you will shut out many people whom the hospital is intended to serve. I think such strict business methods do not belong to a hospital for the care of people who are in distress or in semi-distress. You can't set up a standard for people to pay bills. One man with a salary of \$20.00 will be able to pay a bill, and another man earning more will not, and I think you have to study every case with a kind heart in every matter and be reminded that the first business of the hospital is to take care of the sick.

A MEMBER: My answer or discussion didn't have anything to do with the care of the patient but with the collection of old accounts. I very much regret if I made any statement that a hospital wasn't for the care of the sick. I insisted that these letters were sent out only after repeated requests. You know the history of Fall River where the cotton industry is. We have written off over \$20,000.00 in the last six months,—accounts of people who couldn't pay. We have 123 accounts on which we are getting a dollar a month. If a patient comes in and says he can only pay 50 cents a month, I do not question him but I expect him to pay that; and I do not think that interferes with his care as a patient or the care of a member of his family. I am speaking of the man who comes into the hospital without the slightest intention of paying. They take a seven dollar room when they should take a two dollar one. And the community has to make up for it. And an individual should not ask for a seven dollar room when his income only allows him to pay for a two dollar one, and the time to go into that question is at the time with the responsible head of the family and ask him and place him in a class where he belongs, and

not let him select a high priced room when he should be in a ward. After the first week if there is no financial arrangement made, is there any harm to talk to that one and ask him his financial status, and if he intends to pay, he doesn't mind it; and if he didn't intend to pay, his feelings are hurt.

DR. CHARLES H. YOUNG, Portland: It might be interesting to cite a concrete example of successful collection in Portland where about a year ago at a meeting discussing collections one of the members of the board volunteered to give as a donation to the hospital to take over the outstanding and day-to-day accounts and to pay the salary of an individual to do that. He went to a collecting agency, the agency being a young man and his wife who had an office in the town with several clerks. He engaged the man on full time salary of \$75.00 a week to collect the hospital's bills. He started out and began to collect at the rate of \$2,000.00 a month on old accounts, and that has dwindled down until all the old accounts have been collected, and he is up to date on the accounts and he finished his year and will have collected \$12,000.00. So he has justified his salary.

After that we intend to establish a clerk as a collector to take bad accounts outside of the City and go over the State with an automobile as, for instance, a man who recently sent his daughter into the hospital and ran up a bill of over \$200.00 which he said he couldn't pay. The collector drove out to the town where he lived and said the man can pay but doesn't know it. He has a farm of 150 acres. In other words, he has a farm of 100 acres which are idle to him; and the collector suggested that he sell the 100 acres and have a little left to replenish his stock and have enough to live on, but he wouldn't agree. But he finds in many instances where people say they can't pay, by suggesting things of that sort, and he has been successful.

A MEMBER: Our policy is every consideration for the patient who can't afford and none for the man who can afford to pay but doesn't.

Question 25—What are the most effective methods of securing an endowment fund?

DR. GEORGE A. MACIVER, Boston: At one of our meetings Dr. Washburn described various ways of raising endowment funds; and his remarks are to be published very shortly and will be included with the proceedings of this meeting and will be mailed to every member of this organization.

Question 26—What can be done to shorten the time that out-patients must wait for medical service?

DR. GEORGE H. STONE: There is only one way—the appointment system.

DR. D. L. RICHARDSON: There is one way, and that is to have one of the residents put in his

time. With the visiting men it is difficult, but the more you keep after them, the better results you can get; but if you have a resident who looks after the out-patient department, that resident can build up the department.

Question 27—When is a hospital properly protected against fire and what constitutes a fire drill in a hospital?

DR. JOHN M. PETERS, Providence: I don't feel able to answer that last question. Personally I am in favor of sprinklers. Personally if you can get a fire-proof building, I agree with that—but if you store goods in the basement or attic, you should have a sprinkler system to cover those.

The safety in case of fire depends on the quickness with which you can get the patients from that floor. At the Rhode Island Hospital we are insured by the Factory Mutual Fire Insurance Company. A great advantage to us of being under their protection is the fact that they send inspectors unexpectedly around to look over our buildings four or five times a year. The inspector will send his card in the morning and have someone go over with him around the buildings looking for trouble; and he sends a written report to the Company, and then the Company sends recommendations to the hospital, and those recommendations are followed out.

In other words, the danger of fire could be overcome, first, by the use of fire-proof materials; second, the storing of inflammable material in fire-proof places or have them covered by sprinklers; and third, to have the apartment where patients are housed with sufficient means of exit, in case one exit is cut off.

As to fire drills, I don't know. We have our fire apparatus inspected. The nurses are shown how to handle the extinguishers, and they are shown where the pails are placed, and the internes also are taken around in groups and asked what to do in case of certain things, as, for instance, a fire in Ward A. We have all our beds on wheels, and all patients can be wheeled out of the wards into another building, and these wards or buildings are separated by a fire-proof door. And we have asked the fire department people what they would recommend, and they say they wouldn't recommend going further than we do.

Question 28—What objection is there to having a "hospital year" coincide with the calendar year?

DR. GEORGE H. STONE: I should think there would be no objection.

Question 29—What benefits are obtained from hospital inspections from outside sources?

DR. GEORGE H. STONE: I suppose this question is asked with reference to the inspections

of the American College of Surgeons and various other organizations.

(No further discussion of this question.)

Question 30—What can be done to get suitable internes for small hospitals and to prevent them from cancelling the appointment at the last minute?

DR. GEORGE H. STONE: The American Hospital Association has a special committee working on the interne situation, and I think they have issued a report which contains a great deal of information along this line and I think it would help you to get that report.

Question 31—What kitchen personnel would be required to feed a daily average of 512 people?

MISS EVA M. THALLMAN, Dietitian, Massachusetts General Hospital, Boston: I think the personnel would depend on the type of people. The only thing I would bring out, of course, would be the different types of working people you are handling.

You would need three dietitians so that one dietitian could be relieved, and then the persons working under them—the chef wouldn't delegate his work to the other. So the personnel would simply be an individual problem for each situation.

DR. CHARLES A. DREW, Worcester: I don't know as I can say what the personnel ought to be but I can tell you what the personnel is: one supervising dietitian, one dietitian and one assistant dietitian. The supervising dietitian has charge of the meals for the wards and the ordinary house diets and for the nurses and house doctors. The assistant dietitian has charge of diets prescribed by doctors; four pupil nurses work in the office of the dietitian, nurses in training, one chef, one chef's first assistant, two second assistants (reading manuscript) one night cook, one baker, one baker's assistant, etc., each off duty one day a week. It mounts up to about 28 or 30 employees.

Question 32—Should the person planning menus purchase all food stuffs and also have control of kitchen?

(There was no discussion of this Question.)

Question 33—What is the best method of checking foodstuffs coming in?

DR. GEORGE H. STONE: By actual count, and you have the checking made off with the delivery lists of the tradesmen.

Question 34—What is the best system of keeping inventory of hospital linen when central supply and requisition system is used?

(There was no discussion of this Question.)

Question 35—Do you think a training school should be carried on in a small hospital when the graduates from that hospital are more acceptable in the community than those graduated elsewhere?

DR. GEORGE H. STONE: I think Miss Thurlow answered that question in a way.

Question 36—Does a student get as much out of giving good care to two or three patients as she does giving hurried care to four or five?

(There was no discussion of this Question.)

Question 37—How may we educate doctors, nurses and other employees to recognize the value of supplies and material, light and heat, and to prevent waste?

DR. JOHN M. PETERS, Providence: I don't know except to have a standard of supplies that you would give out on written requisition. In Providence we issue surgical supplies three times a week on requisitions and unconsciously we have established a standard there of so many yards of gauze to an average surgical case and to a medical case. Those requisitions are made out by the head nurse and endorsed by the assistant and stamped by the superintendent or by one of his assistants and issued.

If unusual requisitions are asked for, an attempt is made to find out the reason why and have the people who ask for these unusual things explain why these extra things are needed; for if everything is given out that is asked for, the asking will increase rapidly.

In regard to the controlling of the heat and light, etc., I see no way except calling the attention of the person to the fact that it is being wasted—to make a request rather than a demand.

A MEMBER: With reference to the waste of heat—in the beginning of January this year we placed in each of our wards and larger rooms and sun-parlors a printed 30 day, three hourly, temperature sheet and in the center of the room we had a thermometer. That sheet carried printed instructions as to the proper temperature of 68, and if it went above 70, it should be reported to the superintendent; and it was the nurse's duty to record the temperature and regulate the temperature in the wards by opening the windows and doors. At the end of January I found the average was about 80 and realized that something drastic should be done and I took the responsibility myself and made the rounds three times a day to see if the nurses were properly charting the temperatures. I found they were not. They were an hour late. I said that this ward is too hot, it ought to be ventilated, and I was astounded to find out that they didn't know how. I found it necessary to lecture to the nurses, every one of them, on the practical side of ventilating the wards and re-

ducing the temperature. The theoretical side I left to the doctors. My talk started on the basis that 68 was health temperature; 70 should be the top, and under no circumstances more, on the basis that that was correct but not explaining why, and I went there and told them how to regulate the temperature; and a short month showed this result—the average came down to 70½ throughout the hospital.

From a viewpoint of waste in 28 days we saved over \$100.00 in the heat bill. That was taking into consideration the mean temperature of February, 1925, as against February, 1924, to say nothing of the additional comfort to the patients and perhaps to the nurses as well.

I am perhaps a little strong in my talk. A slogan went around the hospital "70 or bust."

MR. CHARLES H. ADAMS, Melrose, Mass.: I have what we call a self-recording thermometer, a thermometer that takes the temperature of the wards every 15 minutes for one week, that acts of itself and records; and then you have the diagram which you can take off every week and see the temperature of the wards every 15 minutes, and that helps you keep track of the temperature. It has a paper dial on it with a needle. I have one also that records the steam pressure in the boiler in my office every 15 minutes in the week; and these self-recording thermometers are very useful because they give you the actual temperature.

A MEMBER: We have a self-recording thermometer, but that doesn't help to regulate the temperature. It only records it. The best purpose I found was to cover it over and seal it up and with that check up on the nurses.

Question 38—Should the venereal disease clinic be maintained by the general hospital or the health department of the city?

DR. LEWIS A. SEXTON, Hartford: The handling of the venereal disease problem is distinctly a community question and should be handled by the community without doubt. If the community maintains hospitals in the cities, it is a part of their duty and there is no greater duty to the community than to care for this type of condition. It isn't every community that does that by any means. That doesn't lessen the responsibility of the community. I suppose a certain number of general hospitals represented here have to take a certain number of those cases; but I feel strongly because we have to care for many of them for the hospitals of Hartford will not take them unless they are paupers, and the majority are not paupers, but we are the only hospital in Hartford that has been taking these cases for ten years to my knowledge; but I have always felt that this being a community problem should be handled by the community. There should be a pay clinic established in the community where the better class can go for treatment and pay for what

they get. That doesn't exist in many places, but that doesn't lessen the responsibility.

MR. DAVID H. M. FULLER, Fall River: I think there should be some correlation in this work with the board of health, if it is going to function properly. The hospital has no police power. There should be correlation with the board of health, otherwise you can't get these people back to you.

Question 39—Are the hospitals finding gauze renovation practical and economical?

DR. GEORGE H. STONE, Bangor: I think there is no question about that. They are finding it economical.

Question 40—If the superintendent is a layman, how far should he be responsible for the professional work of staff and internes and for discipline of internes?

MR. CHARLES LEE, Waterbury: Regardless of whether the superintendent be a medical man or layman it is my opinion that he should not be held responsible for the professional work of the staff. I don't believe any one man should be made responsible. In our hospitals that responsibility is put on the efficiency committee of the staff which is a committee of five members appointed each year, one from each group; and that committee is responsible for the professional work of the staff and of the internes.

As to the discipline of the internes—the superintendent is responsible, not the professional man.

Question 41—How can the dispensary secure a better co-operation and attendance of its patients and prevent them from discontinuing treatment as soon as improvement is made but before being discharged?

DR. GEORGE H. STONE, Bangor: I think the answer to that is the social service department with some follow-up system.

DR. D. L. RICHARDSON, Providence: A hospital is just like any business concern, and patients will come back when they get service which they appreciate and which they see is really making them better. If your patients are not coming back as often as they should, you should investigate your out-patient department and get better service. The other factor is a follow-up system as Dr. Stone said. We have adopted that in the City Hospital. We have used the district nurses in the follow-up system. That is, we hire district nurses to come in. Those nurses are working in the very community where the patients are coming from. Those nurses can go to the home and assist and see that the various orders of the doctor are carried out and at the same time bring back the patient, and that saves duplication of the work of the hospital, and that has revealed that a great many of the patients ought to come

back. The first thing is to give good treatment and the second thing is to have kindly follow-up. You can't drive people to come back but lead them if you can.

Question 42—What can the superintendent do to prevent jealousy and friction between departments and employees of different departments?

A MEMBER: Use liaison officers as they did in the war.

DR. J. M. PETERS, Providence: I would like to hear from some of the ladies here.

MISS BERTHA W. ALLEN, Newton: I don't know that we have any jealousy, but this is what we do—we have a conference once every month at which the heads of all departments are present from the housekeeper, the dietitian and every head of department and we make a report and bring up anything of interest and thrash out our troubles there.

Question 43—What can the hospitals of Massachusetts do to obtain more adequate compensation and protection in workmen's compensation cases?

A MEMBER, Fall River: The only thing I can suggest would be organization to help to influence legislation. The present law that we have governed by the Industrial Accident Board I have no right to criticize but I think we can improve. The Board has the power to rule that the insurance companies pay us the rate we charge patients in the ward, a power that they shouldn't have. The law should compel insurance companies to pay the cost to the hospitals for the care of the patients. In addition to that they should pay the doctor for taking care of them. I have never yet been able to understand why a group of men or women conducting a hospital as a board of trustees should take a patient when the insurance companies get good money for insurance, should take that patient at a reduced rate so that the insurance company can pay increased dividends to its stockholders, and that is what it does. I don't believe that any board of directors of an insurance company have a right to take money for charitable purposes and distribute it to the insurance companies, and when they take a case for \$4.50, they give the insurance company \$2.00 of it, and is that charity?—No. There is no logic to it, and there is no reason why it should be done, and the reason it was done was because the insurance companies had their lobby and no other group had any interest; and if we should organize and go to work with that in mind—to get that law changed—and the doctors work with us, I think the thing would be changed, and the insurance companies would be compelled to pay the hospitals the cost; and one cent less than that is unfair.

Question 44—What can the hospitals of this State do to counteract the increasing demands and requirements of the State Board of Registration and the Nursing Associations? If the present course is followed, it will soon be too expensive for hospitals to maintain training schools and too expensive for sick people to avail themselves of the aid of a graduate nurse.

MR. CHARLES H. ADAMS, Melrose, Mass.: I think some of us ought to say that we don't agree with the conclusion at the end of the question. I don't think we have reached any stage in New England where we have got to do any radical thing to counteract the increasing demands of these organizations. I imagine they are working for the welfare of the institutions and the nurses and the care of the sick and I think our hospitals have been wonderfully benefited by their requirements, and if their succeeding requirements follow along that line, we know nothing about it, but the requirements of our institutions have been made by the requirements of these institutions and even the regents of the State of New York.

MISS JOSEPHINE E. THURLOW, Cambridge: If you should study the State requirements of the States of the Union, you would find that they are not as bad as represented. The Western States have higher requirements than the Eastern. There is no fault with the New York law. It is a minimum law. They have a right to require as little as any State in the Union. Our difficulty comes in that any one group of people or that any one person should attempt to arrange the way you should apply that schedule, that is, giving certain subjects at a certain time which may be all right in a place the size of the Brigham, the City Hospital or the Massachusetts General with almost everything in the way of service on the ground which is different from a small hospital which has no children's wards; and yet I would say that a nurse hasn't had proper training unless she has had three months care of children and a maternity experience. We are not trying to make mental nurses out of medical nurses, but after spending 20 weeks out at the McLean Hospital so as to have a sentiment if not an opinion when the question came up in Massachusetts as to whether mental training should be added to our curriculum I didn't see any insane people at the McLean as I saw at the Cambridge Hospital where sometimes we have had to call the officer on the beat after the patient had cleaned up the wards of the doctors and nurses; and some doctors send cases into the hospital with the diagnosis of "gastritis." I have become wary of the diagnosis of "gastritis." Then too they will send patients in for operations, patients who have been committed to mental hospitals three or four times. My experience is limited in this kind of work, but Dr. Packard said that it wasn't a good plan to operate on cases of that

kind because it made them worse. But we do know that those cases are operated upon. I have them tied in bed and charge the expense up to the family. Quite likely I would go to a mental hospital were I to have that kind of case but I haven't seen them. That is due perhaps to the fact that I don't know how to handle it. The nurses are afraid of it, and sometimes the internes are afraid of it, and having a special engineer at the plant when he was called upon to help in these cases he got behind the door and didn't help at all. So we have to depend on ourselves to help to handle these cases, but our nurses don't know how to handle them and we lose out because we don't know what to do.

I believe that a three months mental course should be added to a general nursing course; but it is hard for any general hospital to meet a general schedule arbitrarily laid down where a hospital can't get instructors to go out to teach them and where the doctors grumble and groan when asked to give a course. But if the hospitals could be permitted without losing our standard with other States, if we could get this thing through the National Association in allowing those hospitals to combine certain classes, it could be done. I had to take in three classes, one group in November, one in December and one in June and the June group got less theory, and at the end of a year we were able to put them into the practice, and it can be done.

The hardship isn't in the curriculum but in the way it is forced upon us.

MISS K. M. PRINDIVILLE, New London, Conn.: In regard to the suggestion of mental cases in the smaller hospitals—in New London I asked whether a case was a mental case, I asked the doctor on the service to see it and commit it to the Norwich State Hospital; and when they become obstreperous, the doctor will take it up and have the patient committed to the Norwich State Hospital where they are equipped to take care of the case.

MISS JOSEPHINE E. THURLOW, Cambridge: We usually commit to the nearest hospital to Cambridge, but there is very little functioning going on along that line from Saturdays to Mondays.

MISS K. M. PRINDIVILLE, New London: I think in New London we can have them committed on Sundays.

DR. CHARLES A. DREW, Worcester: I think I agree with Miss Thurlow in her argument that an experience in a psychopathic hospital is a good training. I think the McLean Hospital isn't a good example as there are aristocratic patients there. If the nurse went to the Boston State Hospital, it would be a better idea. I had some experience in the care of mental cases. I went to the Digby Hospital in Nova Scotia, and a gentleman side of me said "I am glad you are not connected with an insane hospital because

the doctor told me the doctors there become insane like the patients." But the alcoholic cases which we receive in our general hospitals are about as bad cases as are received in the psychopathic hospitals; and our nurses get an idea of the alcoholic case, and three months out of a three years training would be a good addition.

Question 45—Is hospital standardization going to put out of existence the twenty-five bed hospital which is filling the absolute needs in a small community which supports the hospital but has no excess other than regular nursing care?

MR. CHARLES LEE, Waterbury, Conn.: As I understand, the American Hospital Association is working on the plan to enable the small hospitals of this size to come in under the standardization.

Question 46—Is the patient's privacy sufficiently maintained when records are taken or copied by a lay person who, of course, knows nothing about professional ethics?

DR. GEORGE A. MACIVER, Boston: In general lay persons don't have access to the records of the patients in the Massachusetts General Hospital. In the private wards no one has access except the doctor and the person who has charge of the record. In the general hospital the records are available to the clinical staff for teaching purposes and they are available to the family physician and they are available to the insurance company as copies of records. We don't allow anyone to enter our copying room for the purpose of viewing records. We take copies and issue them to the insurance companies on the payment of a regular stipulated fee. Lawyers and laymen are never given records unless we have authorization from the patients or someone next of kin. That is the plan that prevails with us and it has been in operation for several years and we have no difficulty about it.

A MEMBER: Do you give the copies to the insurance companies without the consent of the patient?

DR. GEORGE A. MACIVER, Boston: We do on the ground that they could get it by subpoenaing it. If they don't get the record, it is a matter of summoning someone in the hospital to appear with it.

A MEMBER, Fall River: I don't think it is fair to the patient for anyone except the doctor in the case, the hospital authorities, the nurse or the relatives to see the record.

A MEMBER: I think that the intelligent lay person can learn as much of professional ethics in one hour as the average doctor will practice in a life time.

DR. NORMAN C. BAKER, Newport, R. I.: I would like to know whether the records are available to the lawyers who are for and against

the patient, both—whether they are available to both sides and whether it is a custom of the hospital, and whether they have a right to withhold the records.

DR. GEORGE A. MACIVER, Boston: I don't know whether they have a right to withhold the records but it is a custom that has been in vogue for a great many years. We feel that when the patient authorizes us to give the record to the lawyer we are acting within our rights. When the opposing lawyer asks for the record, we ask the lawyer on the other side to give authority; and if that is withheld, the other side has to get the record by subpoenaing it to court.

MR. JOHN C. GARDINER, Springfield: It is very easy for an attorney who has a sufficient reason to go into court and get an order from the judge allowing him to inspect the hospital records.

Question 50—How many hospitals have one person acting as dietitian and housekeeper?

DR. GEORGE H. STONE called for a show of hands, and those that do not were in the majority.

Question 51—What are the advantages and disadvantages of clothes chutes in hospitals?

DR. JOHN M. PETERS, Providence: The advantage of a clothes chute is to get rid of soiled, smelly clothes instead of having them dragged through the corridors to the stairs to have them taken out. The disadvantage is that it might be a source of fire acting as a flue in certain buildings and the possibility of fire spreading through the building unless the flue is regulated at the top, and the possibility of people jumping down such flues if the flue is large enough.

Question 52—What are the advantages and disadvantages of the seven-story hospital over several three- or four-story buildings?

DR. JOHN M. PETERS, Providence: I don't know why seven stories is better than twenty-seven. If the area is unlimited, I don't believe in going too high into the air. You can build a building cheap up to a certain height. There is economy in going up to a certain height especially if the land value is great. The disadvantage is the dependence on elevator service which you must have in a seven-story building and the danger of fire is another disadvantage. There is no question that the air would be purer and the rooms would be quieter on the seventh story than on the first or second story. In Providence we are talking about enlarging our nurses home, and one of the plans we are considering is building a seven-story building. Our first building was three stories with an attic, and our next was five, and this building—we are talking deliberately of building a seven-story building. We could build

over a larger area but it would interfere with certain conditions on the ground. So we are going to depend on elevator service and have sun-parlors on the south, and being on a noisy street, we think the ventilation and freedom from noise will be better.

DR. LEWIS A. SEXTON, Hartford: I should like to refer to two previous questions briefly—What can the hospitals of Massachusetts do to obtain more adequate compensation and protection in workmen's compensation cases?—You can do the same thing we have done in Connecticut. You can pass laws to compel your insurance companies to pay for the care of the cases. We did that in Connecticut in 1921.

A MEMBER: What do you get?

DR. SEXTON: We get whatever it costs. Different hospitals get different amounts.

A MEMBER: What is the highest?

DR. SEXTON: The highest is \$5.85. We get \$25.00 a week.

DR. LEWIS A. SEXTON, Hartford: What are the advantages and disadvantages of the seven-story hospital over several three- or four-story buildings?—If Dr. Peters will permit me to add briefly to that—Mr. Bacon whom you know, who has been connected with the American Hospital Association, has given thought to the vertical distribution of food and supplies and has written a number of articles on this question which are worth reading. It means that the hospitals in the future in the cities are to be built along his plans. His articles have reappeared in *Hospital Management* and he has reprints which are worth reading.

Question 53—Are new-born babies to be included in the daily census?

DR. LEWIS A. SEXTON, Hartford: Yes, absolutely. A new-born baby is more troublesome than an appendectomy case many times over. You include your appendectomies and your laparotomies in your census, why shouldn't you include your new-born babies who require your services every hour of the day?

Question 54—Should a charge be made for circumcisions on new-borns when a special room, not operating room, is used for this purpose? If so, how much?

DR. LEWIS A. SEXTON, Hartford: We do not permit the circumcision of new-born infants in the Hartford Hospital. It entails too much work, too much time, too much risk of infection, and is best done at a later date in our opinion. We average five new babies a day, and we have no difficulty about deferring circumcision to a later date. I don't think in the eight or nine years I have been there we have had more than one or two.

Question 55—Should a charge be made for nitrous oxide in addition to the regular oper-

ating room charge, when both gas and ether are used? If so, how much?

DR. LEWIS A. SEXTON, Hartford: That depends on the charge you make for your operating room. An operating room charge should be made sufficiently large to protect the institution against any expense that is incurred in the supply of gas and oxygen. There is undoubtedly a great comfort to the patient to be able to have an operation performed with gas-oxygen. Sometimes we run them over periods of hours without ether at all. It costs the hospital a great deal. We have never made a charge for it. But it is something that the patients enjoy very much and I think would be willing to pay for. Our gas and oxygen bill at the Hartford Hospital is about \$755.00 a year, and we make a charge of \$10.00 for every major operation and \$5.00 for minor operation and \$3.00 for ward cases. That gets us out of it. We don't make any money out of it.

Question 56—What is the remedy in the matter of physicians having on their shingles the words "physician and surgeon" which is so misleading to the public when we all very well know that every physician is not a surgeon?

DR. GEORGE H. STONE, Bangor: I don't know how we can answer that. They probably do as they please.

There was no answer or discussion of **Question 57** (a and b).

Question 58—How can the small hospital in the isolated community best meet the requirements of the present day curriculum?

MISS JOSEPHINE E. THURLOW, Cambridge: That is quite an extensive question, and I would suggest that any small hospital having difficulty with that take it up with Miss Riddle, who is very well able to advise on that matter.

Adjourned until May 14, 9:30 A.M.

Mr. John C. Gardiner, Supt., Springfield Hospital, Springfield, Mass., read a paper entitled "Autopsies" (from ms.).

AUTOPSIES

BY JOHN C. GARDINER

LAST spring when your President wrote inviting me to read a paper before you, he submitted a list of some four or five subjects that had been suggested for discussion. While all of the topics suggested were timely, and of great value to the Hospital Administrator, there were two in particular which made the strongest appeal to me, namely "Purchasing Methods in the Smaller Hospitals" and "Autopsies". After

considerable thought, I finally selected "Autopsies" as the subject of this paper. Perhaps I was influenced in my choice not a little by hearing the very able address on this subject given by the Pathologist of the Harvard Medical School at the New England Sectional Meeting of the American College of Surgeons in New Haven last March. His viewpoint is naturally that of the Pathologist; his subject was thoughtfully and excellently handled. There is, however, another angle; that from which the Hospital Superintendent views this subject, and its difficulties and problems are not always appreciated by those members of the Medical Profession who are on the Hospital Staff.

Every Hospital Superintendent wishes his Hospital to have as high a percentage of autopsies as possible. The reasons for this are obvious and there is no need to dwell on them here. At the same time, it is equally plain that the tendency today is for the percentage of autopsies either to remain stationary or to decline. Many articles have appeared in the Medical papers during the past few years in attempted explanation of this decline in Post Mortem examinations. Some have stressed the lack of interest in Morbid Pathology on the part of the general practitioner; while others have emphasized the neglect of the Post Mortem Room; citing the failure of the attending physician or surgeon to remain through a complete autopsy. Still other articles place the blame on the absence of attempts to study the findings with a view to using them for checking up in future cases; or the failure of the physician to obtain autopsies on his private patients, though the more intelligent are often more willing to give consent than the family of the ignorant day laborer who has just breathed his last in a bed in the Hospital Ward. While all of these reasons are no doubt more or less true, no one of them alone is a sufficient explanation. There is rather a combination of causes numerous and varying in different localities and in different Hospitals.

From the standpoint of the Hospital Superintendent, perhaps the greatest obstacle to Post Mortem examinations is that presented by the legal aspect. The law on this subject varies in different states. Very often it is not clear and definite as to who shall give consent. Where such a condition exists, it is always necessary to exercise great caution. The person who takes charge of the body may be willing to consent, but may not be the next of kin. Consequently there arises the great risk of a suit being brought both against the Hospital and the Pathologist performing the autopsy. No Hospital Superintendent wishes or can afford to take a chance of this sort, no matter how interesting the case may be from the medical side, or how great the disappointment. One of the essentials of a successful administration by the Su-

perintendent today is the ability to keep the Hospital out of trouble of this nature. There is nothing more detrimental, I may say fatal, to the reputation of the Hospital than the law-suit. These, however, seem to be more frequent than they were a few years ago. They are becoming more and more a popular pastime with a certain class of people who see in them a chance of getting easy money; figuring that the Hospital, fearing the publicity involved, will settle the suit. Frequently this has been done, and not always perhaps wisely. Yet in some instances, no doubt, it has been the only thing to do, the peculiar wording of the state law having left just a loop hole on which to base a suit.

All of us no doubt, especially the Superintendents in the larger cities, have had instances where permission had been granted only to be revoked a few hours afterwards. This has been due sometimes to lack of understanding, especially in the case of foreigners, as to just what the doctor was seeking. Again, it has been the undertaker who has been antagonized or his work made difficult by lack of consideration in some previous experience. No matter what the reason may be that has led to a change of decision, all that the Hospital Superintendent can do is to try moral suasion, and, if that fails, as it almost always does, to acquiesce gracefully in the demand. If he does not, it is almost certain that, sooner or later, some ambulance chasing lawyer will get hold of the family and be given authority to start suit on a commission basis. The Hospital Superintendent will do all in his power to avoid anything of this sort.

Another factor often overlooked but none the less powerful in its influence is the wide-spread growth of cults and beliefs which put no faith in medical treatment. In considering this class, we must not overlook the people who refuse the services of the medical profession on account of their religious belief. There is a difference between the two classes mentioned, but when it comes to the question of consent for a Post Mortem examination the result is the same. When a person lies dying in a Hospital, one whose religious beliefs run directly contrary to the surgeon's desire for an autopsy, or when the relatives are under the influence of a Cult or Ism, it is all but hopeless for any consent to be obtained. I have met with instances of this sort in my experience, when the law has required the death to be reported to the Medical Examiner. He has ordered an autopsy to be performed. Afterwards the relatives have come to the Hospital, demanding to know why the autopsy has been performed and on whose authority. It has sometimes been difficult to convince them that the Hospital had nothing to do with it having no choice but to comply with the legal requirements. In one instance in particular, a lawyer was retained with instruc-

tions to begin suit. After investigation, however, he was convinced that no valid ground for suit against the Hospital existed, and the matter was, perforce, dropped.

Another factor of influence often overlooked, and very difficult to detect, is the indifference or active opposition to autopsies, that sometimes exists on the part of the Hospital clerical staff. This indifference or opposition may go on for months until some chance event uncovers it. Often it is simply timidity or undue sympathy for relatives who have recently been bereaved. It is undeniably difficult to approach them, no matter how tactfully and gently, in order to get the necessary consent. Wisely, the tendency today in the larger hospitals is to have the Internes do this and, in the smaller, the family physician, if he will. It is a task, unpleasant at the best and requiring sympathy, tact and diplomacy in the handling. It is possible and highly desirable to do it in such a way that the relatives will carry away a good opinion both of the one who seeks consent and of the Hospital. It is really an index of the Hospital's attitude towards the public. There is still another factor that enters this question from the Hospital Superintendent's standpoint, and enters it very strongly, and that is the undertaker. All of us know of instances where permission has been refused; or where it has been granted and then retracted at the instance of the undertaker. There has been keen resentment felt and sometimes things have been said, which have been neither wise nor judicious at his supposedly arbitrary action. If time and trouble are taken to cultivate the undertaker's goodwill, when it seems as though he had been working against the Hospital, you will find that some unfortunate experience in the past is at the bottom of it all. If you can assure him that you want to help him, and that you need his co-operation, and will not make his work unduly hard, there is no reason why you should not have it. There is absolutely no question but that the undertaker's work in many instances has been made harder. There has not always been the consideration shown him that is his due. He has not always been notified when the remains are ready for removal. He has been required to make needless trips to the Hospital and to the Board of Health. Sometimes permission to be present at the autopsy has been refused; when from his standpoint his presence would facilitate his work. He is only human and why should he not be resentful under such lack of consideration?

A few years ago the Superintendent of a suburban Hospital near New York City had gone to considerable trouble to secure permission for a Post Mortem examination on the remains of a Spaniard, which were to be sent back to his home in South America. Very unwisely, the Pathologist, though present, allowed the In-

terne, who had recently finished his training in a large New York Hospital, to perform the autopsy. The undertaker had asked to be allowed to be present on account of the long journey ahead and the Internes had taken it upon himself, unknown to the Superintendent to refuse him. To make matters worse, he started in to show how the autopsy should be done, with the result that the Pathologist was compelled to stop him and finish himself, what he should have done in the beginning. The autopsy was so badly bungled that nothing was found; the remains were embalmed only with great difficulty; and the undertaker felt such resentment against the Hospital for years after, that he lost no opportunity to run it down wherever he had the opportunity. An extreme case, no doubt, I frankly admit; and I use it only to show what can happen and what should not be done. The undertaker deserves consideration and should have it. There is no reason why there should not be mutual goodwill and co-operation between him and the Hospital. In the smaller cities, the towns and villages, next to the clergymen and the family physician, his word has often the greatest influence. He can be of the greatest help to the Superintendent in smoothing out difficulties between the Hospital and the relatives of the deceased, because he possesses that most necessary thing—their confidence.

There is one other factor that has influence, and great influence too, from the Superintendent's standpoint and that is the attitude of the Attending Staff, and here we have a problem that is more acute in Hospitals in smaller cities and towns than in those of the larger cities.

Every Superintendent wants his Hospital to have as many autopsies as possible. It is more important than ever to obtain them since the standardization movement has become so firmly established. There are always the Medical Examiner's cases, and, in some Hospitals, they make a goodly proportion of the total, but these are not enough. There is a lack of interest often-times upon the part of the Attending Staff and the Internes. The Internes are not to blame for this, for they are but the mirror reflecting the attitude of the Attending Staff. Why is it that when some men are on service the percentage falls; and when others are on it rises? There is only one answer; it is plain and obvious. I frankly admit that this is perhaps the most serious problem of all. No definite rule for its solution can be laid down. The human equation enters here and it must be approached differently in different Hospitals. However it may be met, it must be in a spirit that is at once diplomatic and unobtrusive. It will not be solved in a day or a year, but only by quiet, painstaking and persistent effort.

In what I have just said, I have spoken of the

obstacles in the way of autopsies as I have seen and met them in my experience as a Hospital Superintendent. Perhaps I have placed too much stress upon them; yet they serve a purpose and it is to show the difficulties a Superintendent faces if he would have his Hospital approach the ideal standard which is our aim. How is this standard to be reached? What is to be done to assure its maintenance?

1. There must be an earnest desire to have autopsies and more of them. This must not be confined to the Superintendent alone or to any one particular attending physician, but should animate alike the Hospital Staff and the Attending Staff. This is the reason why the Mayo Clinic and the Memorial Hospital in New York City have such a high percentage rate of autopsies. They have an earnest desire to obtain them. Where this desire exists, the percentage is always high.

2. One person as far as possible should be designated to obtain the necessary consents. It is better that this should be someone with a medical training. In the larger Hospitals, let it be usually the House Physician or Surgeon to whom this task is delegated. One plan that has worked very well in a large City Hospital in New York City is to give a medical student his board and room in return for his services in this special work. He goes out and visits the family or relatives of the deceased to obtain the necessary permits. In the smaller hospitals, a different plan must be followed. Here, possibly the best method of approach is through the family physician. If he has been approached beforehand and the necessary arrangements made with him, there is usually no difficulty in securing permission. If for any reason his services are not available, the undertaker may be the point of contact, especially in those families where his services have been previously employed. Occasionally, it may be necessary to enlist the aid of the clergyman. In many families, his word carries the greatest influence, and I have known where he has succeeded after all other efforts have failed. All of these methods are legitimate, but just how far they may be utilized depends to a large extent upon the goodwill and reputation that the Superintendent has succeeded in building up for the Hospital.

3. Lastly, all that is possible should be done to have the laws of the State revised wherever it may be needed so that they are plain, definite, and, so far as possible, uniform with no loop holes left open to tempt law suits. This is not a task to be accomplished speedily or over-night, implying as it does, a scientific education of our legislators. It can only be brought about by the united efforts of the Medical Profession and Hospital Superintendents together with the help of those people who are interested in Hos-

pitals and the attainment of the best and highest in the care of the sick, the end for which the Hospital is established and for which the Superintendent labors.

DISCUSSION

DR. HAROLD W. HERSEY, Supt., Bridgeport Hospital, Bridgeport: I am sure we have all enjoyed very much hearing this interesting paper of Mr. Gardiner's on autopsies which is a very searching subject; and I am sorry there are not more people here to have heard his paper. There are many points he raises to which I agree and which are very important. In the first place, you must definitely have a desire on the part of your staff for autopsies. That is one of the things I have found in other hospitals to be lacking and difficult to arouse. The staff doesn't seem to be as interested as they should be in securing autopsies. In many instances the securing of the autopsies is put definitely up to the staff, and they from a fear that they may possibly lose patients in the future or from a fear that their work or diagnosis may be shown up as a wrong diagnosis are not as interested in securing autopsies as they should be. So you must have definitely on the part of the staff and all hands concerned a desire to secure autopsies and work to that end.

Secondly, I think it is absolutely important that proper facilities should be furnished so that autopsies can be done under a clean, sanitary routine. There should be proper facilities for the storage of bodies so that the whole procedure should be a dignified procedure. I have in mind institutions where such facilities are not available. I have in mind an institution where an attempt was made to interest the board in the facilities for the performance of autopsies, and one member of the board said to me "if these men have the right idea to do autopsies, they would do them in a barn." I said "let us go down and see what the facilities in your hospital are for taking care of these conditions," and he said "Oh, no, I won't go into the place; I won't go near it;" which shows the desire he had. So you have to educate your board to the necessity of autopsies before you can interest the staff. So both of these groups must be interested, and proper facilities must be provided for taking care of the autopsies.

Then there are things that can be done to interest the staff in autopsies. Most of the hospitals have staff meetings at which the cases are discussed, and at those meetings they discuss their poor results as well as their good results; and it is quite essential to back up the reports of deaths by autopsy reports, and if there are not sufficient autopsy reports, it should be commented upon to stimulate interest at that time. Of course, in the hospitals that are teaching hospitals there is a great difference in the

desire for that sort of thing. The people are eager for it, and some of us who are not connected with teaching hospitals find that more effort has to be made than otherwise.

In addition to that in approaching the subject of autopsies it is essential that a definite line of campaign should be planned. In other words, there should be a definite person, who should ask for permission to autopsy the case, and that again should be approached in a dignified manner. There should not be an attempt to bulldoze the people to signing their names on a dotted line or get their permission under false pretenses. There should be an attempt to show interest to approach the autopsy, to show why an autopsy is desired and explain to the people that there is a definite reason in the case because the case is unusual and the doctors feel that there is something of value to the family that can be found; and if that is explained to them and the value it may have to the family later on, such permission can be secured. That should be led up to gradually. The relatives should not be approached immediately, but it should be a definite dignified approach.

Then having secured that permission, the paper should be ready for them to sign so that there will not be a consultation at home and the family rule against it.

In addition to that it is important in securing the permission to know whom you are talking to, their relationship to the deceased and whether they have a right to give permission and whether there is to be trouble in the family later on. I have in mind an instance where an interesting case died, and the pathologist was anxious to secure an autopsy—that pathologist was eager to secure an autopsy on anybody; as a matter of fact, I seldom went to his laboratory because I thought he would be glad to autopsy me—but any way in this particular case the permission had been secured from an 18 year old girl who was a sister of the patient, and there were brothers in the family who were older; and later on it developed that the young girl didn't know what she was doing. She had in a way been bulldozed into it; and I felt we were wrong in doing an autopsy on that particular case and dissuaded them from the autopsy, and then after some trouble all was smoothed out, the permission was gained. In the first place, the 18 year old girl wasn't old enough and the permission of the brothers should have been secured.

Another thing—if you get complaints in connection with autopsies which are being performed or associated with the condition of the body, you should definitely look into those complaints at that time. I was in my office several years ago, and the telephone rang, and a lady's voice came over the line, and she was disturbed and gave me a bawling out. It seemed that her brother had died in the hospital and they were

about ready to have the funeral and they found marks on the patient's body. As a matter of fact, the patient was an alcoholic and had been under restraint and was more confused when he came into the hospital; and the lady at the end of a half an hour assured me that as soon as the funeral was over, they would institute suit against the institution. I immediately inquired of her where the funeral was to be held and I found out and proceeded to go to the funeral and I took with me the pathologist and the head of the medical service and we went to the funeral. We found the room crowded with relatives and friends; and we stepped into the room and listened to the services, and I became more and more sorry and I was sorry that the sister wasn't there rather than the brother because she had been very nasty. At the end of the services we were invited to review the remains and we found that the only damage which showed at all was on the wrists where the patient had been restrained and that no other contusions were present. The body was in perfectly normal condition, and we got hold of the undertaker and had him assure the sister that everything was all right and then we told the sister what we knew and said if she wanted to go ahead with the suit to do so, but we never heard anything further. In that particular case if we hadn't gone down and checked up on the case, we would have had a disagreeable process on our hands.

It is an important thing to keep in touch with the undertakers and to have them on a friendly basis. They have their job to perform, and it is true that an autopsy does delay the undertaker in getting the body to the family in time, and so we should help out in that plan to aid the undertaker. Several years ago at an autopsy the undertaker was very much disturbed and restless, and I asked to have the undertaker sent in to see me and I recognized him and said "What is the matter? Have you got the itch?" and I talked it over with him for several minutes and found that he had definitely an appointment for bringing the body home and in addition to that he had to go to his dinner. So we flipped a coin, and we had the autopsy, and I invited him to dinner, and later on he called up and said "I have secured an autopsy for you." So from that case you can see it is possible to co-operate with the undertakers instead of antagonizing them.

Several weeks ago I was invited to speak at a club among the after dinner speakers. I accepted and I found I was supposed to talk on the subject of "The community and the hospital" and I proceeded to do so and talked along the line of "fellow workers" and I found that I had been invited to speak at a meeting of undertakers on hospital problems, so the "fellow workers" was of interest to them.

I believe that when we secure an autopsy it is important to put it through on time and to inform the undertaker when the body is ready and we should write to the relatives and tell them in English what has been found at the autopsy. It is an important point to tell the relatives what has been found in plain English, and if you make such a promise, see that it goes through, see that you write it yourself and not leave it to a clerk. Write a letter stating definitely what has been found and be sure to thank them for it at the end.

REQUIREMENTS FOR CO-OPERATION BETWEEN HOSPITALS AND FUNERAL DIRECTORS*

BY ARTHUR H. CHANDLER

The object of this paper is to show some of the problems that the Funeral Director is confronted with when he is called to care for bodies that have passed away at the majority of hospitals today.

Rather than give an address or speech I am going to show you as near as possible what happens between the family and funeral director and what an important part the doctor plays after death although he is in the background.

First, I want you to know that the Massachusetts Funeral Directors' Association has gone on record as being in favor of post mortems and as an Association will do all that they can to help you.

Henry W. Clark, treasurer of the Massachusetts Funeral Directors' Association represents the family.

Mr. Blank receives a telegram to the effect that his niece passed away at 9-45 last night and he is requested to come to the hospital as Dr. W. wishes to see him.

Signed—Hospital of Today,

X. Y. Z. Supt.

Telegram received at about 7-30 in the morning and at 8-30 Mr. Blank is at the hospital to see Dr. W. and of course Mr. Blank is more or less nervous and is met by Dr. W., who proceeds with the conversation along this line, that he is very sorry and assures Mr. Blank that every effort was made to save his niece, but as the appendix was ruptured before she arrived at the hospital, it was very hard for the doctors to save her and then in the usual manner requests the privilege for an examination so as to be certain of the exact cause of death and

*Given before the New England Hospital Association at the Fourth Annual Meeting at Hotel Bancroft, Worcester, on May 13 and 14, 1925.

assures Mr. Blank that the examination will not delay matters at all and will make no difference in any way to the funeral arrangements or the appearance of the body; that the body while at the hospital will be kept just the same as if it were at the Funeral Director's establishment as the hospital has a place made to keep bodies. Permission for an examination is granted by Mr. Blank.

Right here, I want to ask Four questions for your consideration.

What do you suppose Mr. Blank had in mind would be done in making the so called examination?

What do you suppose Dr. W. had in his mind would be done when he asked for the examination?

What do you suppose the Doctor who actually did the work, had in his mind to do when he started the examination?

Do you think that they all had the same idea as to what the examination meant?

We will go back to the conversation of Dr. W. where he says "It will not delay; it will make no difference to the funeral arrangements or the appearance of the body and the body while at the hospital will be kept just the same as if it were at the Funeral Director's establishment." The above statements were made to me by a doctor in one of the hospitals of today trying to get permission for an examination of a relative supposedly to have passed away at his hospital. When I questioned this doctor as to what he knew about funeral arrangements and how we kept bodies when at our establishment he freely admitted that he knew nothing as to the details and arrangement of a funeral nor did he have any idea as to how we kept bodies while at our establishment. In fact he knew nothing about our work at all and yet he told Mr. Blank it would make no difference in any way.

About ten o'clock Mr. Blank comes to a Modern Funeral Home and requests that we go to the Hospital of Today for the body of his niece and in making the arrangements with Mr. Blank we find that his niece is a young lady twenty-eight years of age; that she is a member of the church and a number of societies also; that it was her intention to have been married next month and as she had her wedding dress all ready Mr. Blank wanted us to use that. It was arranged to hold the funeral service from our Funeral Home as Mr. Blank expected about four hundred friends would attend and his home was not large enough to accommodate that number.

While Mr. Blank is with us we telephone to the Hospital of Today and inquire if it is all right for us to go for the body of Miss Blank and we are told it will be ready when we arrive.

Mr. Blank then inquires what time he can come in and see his niece and to be sure that we

allow time enough we tell him any time after six o'clock will be all right and also that any of the friends who wish may call.

That afternoon we have two funerals at 2-30 and have use for our hearses, but as we have three hours and a half before the funerals we have plenty of time to go to the Hospital of Today which is only fifteen miles away, for the body of Miss Blank, and I proceed with the details of the funeral while my men go to the hospital.

At a little after one I receive a telephone call from my man to the effect that the doctors are having a post mortem and the body will not be ready until about 1-30, and that will not give him time to secure the necessary papers and return for the 2-30 funeral, so I will have to hire a hearse at an expense of \$15.00 and one that is not as good as we usually use.

At four o'clock my men arrived home with the body, and when questioned as to the delay, they explain that it was half past one before the doctors finished the post mortem and the Superintendent who signs the death returns had gone out to lunch with a friend and it was after two-thirty before he came back, and at the City Hall they were held up because in signing the return the doctor had neglected to fill in the date of death.

Next, my embalmer calls me into our operating room at about five o'clock and tells me he wishes me to see the condition of the body before he starts, stating that all he has done so far is to replace the skull so that the marks of the post mortem will not show and to fix the arteries of the head so they will not leak. My embalmer is very much upset and has his tape to show me that the incision is over an inch above the collar bone, and that the arteries of the neck have been cut off so high up he could not use them and there were the ears and neck badly discolored and besides all this the hair was in such condition that it must be washed and the family due within an hour expecting to see the body in the casket. All this within an hour.

As I was leaving, my embalmer asked me my idea as to why bodies that we got from the hospitals were so discolored about the neck and ears, and why it was so hard to remove the discoloration and why was it the nurses always closed the mouth with a bandage that was sure to leave a mark on the face which was very hard to remove and in many cases could not be removed, and why they still continued to tie the hands together in such a way as to leave marks on the wrists?

I tried as best I could to explain to him that the nurses were not to blame as they had not had instructions as to the proper care of the body immediately after death. In fact they were doing just as was done years ago. The

discoloration I explained was due to the fact that immediately after death the nurse would remove the pillow from under the head, allowing the head to be as low as the rest of the body and then bathe the body and put a sheet around it. The moving of the body in the way it was done created a pressure that forces the then liquid blood along the course of least resistance which meant to the head, and as the body was carried to and placed in the so called morgue with the head low, the blood could not drain out and cooling the body in this position is why it was so hard to remove the discoloration. As to the bandage used to close the mouth and hold the hands together, that had always been done without any thought as to the effects. I told him that I felt sure it was because the hospital and nurses did not know just what should be done immediately after death and that they had never considered the Funeral Directors' side.

Soon after six Mr. Blank and a party of friends call and are told it will be late before we can complete our work, and to cover us have to explain that we were delayed in getting the body at the hospital because of the post mortem and that the doctor was called away and we had to wait for him to come back to sign the death return.

Under usual conditions Mr. Blank would accept these facts as necessary delays, but just now he is under a great strain and things look differently to him and he can't understand why we couldn't bring the body right back and get our papers some other time. The delay has aroused in him a fire of dissatisfaction that is very apt to increase unless we can do something to prevent it, with the result that we usually take him home in a limousine with the advice that we will call for him the first thing in the morning when everything will be arranged.

Miss Blank had many friends and as the notice had appeared in the paper, about thirty-five of them called during the evening and each had to be told about the delays.

All this time the embalmer has been working to restore to a lifelike appearance the features of Miss Blank, but although he is the best embalmer around here he has been unable to remove the marks on the face and hands both caused by the bandages that were put on. Also in removing the discoloration he has swelled the neck some and in covering the marks of the post mortem he has built it up a little which is noticeable, for with the low neck dress of today, from four to five inches of the incision shows.

The next morning Mr. Blank comes in and freely expresses his dissatisfaction with the looks of his niece. The neck looks large, the color is not good and what is all the paste on the chest and neck for? We try to explain, but he at once comes back with the statement of Dr. W.

that the examination would make no difference to the appearance of the body. Now to protect ourselves we have to show Mr. Blank what we have covered up and he is very much surprised, as he didn't understand that he had given permission for anything like that to be done.

The time for the funeral arrives and is conducted as it should be. There are about four hundred present and as they pass out of our Funeral Home, we hear them say, "How nice every thing was done but I couldn't make Miss Blank look a bit natural, she was such a beautiful girl in life, and did you see the mark on the face?" "Yes, and it looked to me as if there were something on her neck right in front." "The Modern Funeral Home does everything nicely, but I don't want any of my relatives to look like that."

Mr. Blank comes in and settles with us within a few days; thanks us for all we did, but expresses his regret that his niece did not look more natural as the way they saw her last is the way they would remember her.

The average Modern Funeral Home represents an investment of many thousands of dollars and our success depends a great deal on the looks of the bodies which we prepare for burial and if the family of the deceased is not satisfied it means that the business of that Funeral Director is likely to be less and this of course is a hardship.

The reprint from the *Atlantic Medical Journal*, "The Report of the Committee to confer with Morticians" sets forth very clearly many conditions and how best to overcome them.

On August 11, 12 and 13th our Associations have their annual meeting in Boston, and it would be a pleasure to have you attend with us, and I will arrange the program on the afternoon of the 12th so that some member of your Association can address us.

In closing, I again thank you for the privilege of coming before you, and assure you that the Massachusetts Funeral Directors' Association will do their part to co-operate with you.

"If I knew you and you knew me

'Tis seldom we would disagree.

But having never yet clasped hands,

Each often fails to understand

That each intends to do what's right,

And treat each other honor bright.

'Tis little difference there would be,

If I knew you and you knew me."

DISCUSSION

DR. JOSEPH B. HOWLAND, Sup't., Peter Bent Brigham Hospital, Boston: *Mr. Chairman and Members of the Association*, I think these papers of Mr. Gardiner and Mr. Chandler are very important. I think we will all agree that the physicians' work, their clinical diagnoses, should be checked up by post mortem examina-

tions. We want it, they want it, and after the sadness has gone out, if the family have granted consent, they are glad they have done so because the questions are checked up and the anatomical diagnosis has backed up the clinical diagnosis.

I think we are getting closer together between the hospitals and the funeral directors when we have papers such as Mr. Chandler gave us today. He says the people are going to co-operate and he says his association represents 80 percent of the funeral directors of Massachusetts; and they show they want to co-operate.

Now as to his interesting paper with its conversations, I think everyone can say he has drawn a true bill against us, and I am willing to say so, and it isn't to our credit. You may have missed the point that the patient in his sample case died from appendicitis and you will note that the head was opened. We ought to explain to the friends what we want to do; and if we want to open the head, we ought to explain that. It may not have been desirable in this case of appendicitis to open the head, but there are possibilities the doctor may not have been efficient in opening the head, but things should be done carefully; and then the one who gives permission should indicate the restrictions, and if there are no restrictions, that should be written down. The superintendent of the hospital should sign the permission for autopsies before the body is taken to the laboratory, and no pathologist or other staff member should be permitted to do an autopsy unless he has the signed permission of the superintendent, and the superintendent should be brought into every one of these cases.

At the Peter Bent Brigham Hospital we have a form for the granting of permission for an autopsy, and it is a good one; it was drawn up by a competent lawyer, and he has considered the hospital's safety in drawing that up; and if as a result of this meeting you care for a sample form to use as a model for your hospital, I would be glad to send one to you. It will safeguard your hospital if you have done the things that are indicated in our form. I should like to go back to include the discussion of the former paper but I don't think time permits. so I shall close.

DR. BURGESS GORDON, Resident Physician, Peter Bent Brigham Hospital, Boston: I thoroughly enjoyed the two papers which have brought back points in the experience we have had in obtaining autopsies from foreign born people and domestic born people. I have been struck by some of the experiences which Mr. Chandler has recited. At first it was felt that the undertaker was a "nigger in the wood-pile," was an obstruction and interfering in the obtaining of post mortem examinations; and during the past few months I have had the

pleasure of knowing him and other funeral directors, and their story has carried weight, and their objections are well founded, and the points he has emphasized are worthy of remembering.

There is no doubt that if the hospitals co-operate with the funeral directors, they can obtain more autopsies, and there is no doubt that if there was more co-operation between the Funeral Directors' Association and the N. E. Hospital Association, more autopsies would be secured.

At the Peter Bent Brigham Hospital the percentage of autopsies runs 65 percent more than the number of the last few years, and there is reason to believe that this percentage could be increased 15 percent if we had co-operation. In 50 percent of the cases autopsies are refused on account of religious or language reasons or because of some wish the deceased member may have expressed in regard to a post mortem. Twenty-five percent of the people who leave the hospital are undecided whether they will give permission and "will talk with the relatives." That is the standard remark they make, and they usually go to the funeral director; and there have been cases where the funeral director has advised the family to have an autopsy, but there are cases such as he has well described, of mutilation of the body.

We have obtained permission for autopsies where the house-officer was unable to at home. In one case we were refused permission and afterwards received a telephone call from the director saying that he advised an autopsy, and it happened to be one of the interesting cases of the year.

Speaking of the plan of individual co-operation, the Brigham has always received the stimulus from Dr. Howland to extend itself in every way to co-operate with the family and relatives and funeral directors; and it was suggested that a new incision should be made which would obviate the difficulty Mr. Chandler spoke of about handling people with low neck dresses. (Passing cards to the audience.) You will see in a general way it allows for a low neck dress, and the vessels have also been tied properly, and there is no criticism, and our percentage is obtained definitely by the good will of this incision and by the careful attention of the pathological examination; but our percentage would be higher if other hospitals would help us. We need general co-operation generally distributed.

DR. HAROLD W. HERSEY, Sup't, Bridgeport Hospital, Bridgeport: I wish to express my appreciation of these papers. I believe that if the people who have the securing and overseeing of autopsies could read his paper, or if his paper were available to show to internes, to show them that there are two sides to every story and that they should co-operate with the

funeral directors, there would be more co-operation, and these things which Mr. Chandler mentioned in his paper would not occur so often.

DR. JOSEPH B. HOWLAND, Sup't, Peter Bent Brigham Hospital, Boston: Mr. Chairman, I would like to make a motion that the President of our Association appoint a committee to confer with a committee of the Massachusetts Funeral Directors' Association with the idea of coming together on ways to take care of bodies to obviate the things Mr. Chandler has spoken of. Now he mentions the fact that he had difficulty in caring for the body with rigor mortis from pressure marks of a bandage tied around the chin. Now he undoubtedly knows a way better and he spoke about tying the wrists together; and we ought to know how he would do it; and he also has to embalm the body when we get through; and we ought to get together on some scheme so as to know how the undertaker would like the body.

So I make the motion that the President appoint a committee to confer with a committee of the Massachusetts Funeral Directors' Association to formulate ways that will be satisfactory to both the hospitals and the funeral directors in the care of bodies and the performance of autopsies, and that when such committee has made its findings, that these findings be published for the benefit of the members of the N. E. Hospital Association and be distributed.

DR. HAROLD W. HERSEY, Bridgeport: I would like to inquire whether it should be limited to Massachusetts. I think there are hospital associations and funeral directors' associations in other states.

DR. JOSEPH B. HOWLAND, Boston: My idea was that it would be a big job to get all the

committees of the New England States together to get action. I am willing to have an amendment to that effect if it is considered practicable. I suppose all the other New England States have a funeral directors' association.

MR. ARTHUR H. CHANDLER, Brockton: All but Rhode Island.

DR. HOWLAND: Would it be practicable to get the representatives of the other states together in such a committee?

MR. CHANDLER: I think it would be hard to get them together.

DR. HOWLAND: I think it would be desirable to get the thing going, and if one state could start it, it would apply to the other states.

DR. HERSEY: In addition to that it could be taken up with other hospital associations.

DR. HOWLAND: Considering the difficulty of getting representatives from other states at a meeting of this kind, why wouldn't it be practicable for the Massachusetts people to get this thing out and send the results to the hospitals of each state who are members of the Association their recommendations? We don't care much how you do it but are most interested in the results.

Motion seconded.

THE CHAIR (Dr. George H. Stone): Dr. Howland has moved, and it has been seconded, that we appoint a committee to confer with a committee of the Massachusetts Funeral Directors' Association and that their findings be published and distributed to the members of the Association.

Motion carried (by a show of hands).

THE CHAIR: I have drawn up for this committee Dr. Howland, Chairman; Dr. Sexton and Dr. Rice.

MEDICAL PROGRESS

PROGRESS OF GASTROENTEROLOGY IN 1925

A. EVERETT AUSTIN, M.D.

THE chief interest of the workers has been directed towards the peculiarities of the gastric secretion; the cause and treatment of gastric and duodenal ulcers; the specific treatment for cholelithiasis and the significance of leucocytosis in appendicitis.

GASTRIC SECRETION

Kaufheil and Porges¹⁰ starting from the principle that normally the free and combined hydrochloric acid equals one-half the total acidity of the gastric contents forty-five minutes after the last breakfast, found that the free hydrochloric acid was of little value in diagno-

sis, but this ratio of free acid to total acidity was found valuable. This was determined for convenience by multiplying the free acid factor by one hundred and dividing this by the total acidity. This is to be corrected when the acidities are high by the formula, ratio number found as before, to which the total acidity minus the ratio number, divided by ten, is to be added. For instance, in a case where the free acid was forty-eight and the total acidity 105, the ratio number was forty-six and the corrected ratio number was 52. After the examination of 135 cases, the normal ratio number was established as 45-56. Apply-

ing this estimation to duodenal ulcer, it was found that the ratio number or true acidity, as the authors called it, was in most cases 75, while the lowest was not less than 67. This was usually lower when stenosis had taken place and food is delayed in the stomach, though an active ulcer may be present. Applied to gastric ulcer, this calculation showed no increase in the factor representing the acidity. In fact, it was often normal or less than normal. In cholelithiasis this factor was lowered and in only two cases approached that of duodenal ulcer, and even then was only 67 and 64.

In conclusion, the authors declare that the increased acid factor speaks for a duodenal and against a gastric ulcer.

Ryser¹⁶ criticises the old titration method for determining the acid values of gastric contents as inaccurate and recommends Congo paper for quantitative (approximate) estimation of the acid as well as qualitative, for which only it has been used. The solution (one gram of Congo Red dissolved in 500 c.c. of water to which 200 c.c. of alcohol are added) should not be used directly because it is affected by acid albumin and salt, but pieces of blotting paper should be dipped in it, dried, and kept in a dark place. By comparison with determination of the hydrogen concentration obtained by physico-chemical methods, it was found that the changes in color noted were well within the limits of acidity in gastric contents. Applied to clinical use, the following changes are noted: (1) Intensive blue color of the paper by the gastric contents indicates a high acidity or superacidity and is usually associated with complaints of heartburn by the patient; (2) Blue violet color of the paper shows normal acidity; (3) Dusky red coloring shows low acid values; (4) When the paper undergoes no change and remains red, it shows absence of hydrochloric acid in the gastric contents.

Arnoldi and Schechter¹ tried to show the variations in gastric juice produced not by local irritation but by the changes in the general condition of the body. This was done by giving the patient, fourteen hours before the gastric analysis is made, twenty to thirty grams of grape sugar dissolved in 150 c.c. of water. In this way, the local effect of the sugar (stimulation of secretion) was avoided. Synchronous examinations of the blood sugar showed a marked change in the sugar content. The patients, both normal as far as gastric disease went, and those suffering from ulcer and carcinoma of the stomach, were examined. The duodenal tube was introduced into the stomach and the patient given gruel. Contents were withdrawn every ten minutes and titrations made. It was found both in the persons with normal acid values and increased acid values that these were increased by the previous treatment with glucose. The

restoration of free hydrochloric acid, absent in the first examination, could not be demonstrated in gastric cancer and pernicious anemia by the use of glucose. On the contrary, a preliminary treatment by pancreatin, after a standard of acidities has been established in each patient, showed a more marked reduction in the acid values (free hydrochloric acid and total acidity) in the subsequent examination of each patient. Hence, the authors propose in ulcer, where hypersecretion is present, that pancreatin should be used not only in purely medical treatment, but as a preliminary to an operation and that sugar should be restricted where hypersecretion is present.

Kolta and Benkovic¹¹ have investigated the problem of the association of hyperacidity with pain of gastric or duodenal ulcer as well as with other affections producing hyperacidity, such as cholecystitis and chronic appendicitis. To accomplish this, the patients treated in the University Hospital at Budapest over a period of ten years for these diseases were requested to return for re-examination. Eighty-one responded, were re-examined and results compared with those of their first visit, which varied from six weeks to eight years. The results were as follows: (1) The acid values were diminished in twenty-five of whom one was freed from discomfort, six were better, and eighteen were unchanged or worse as far as symptoms went; (2) The acid values were unchanged in twenty-nine, of whom four were well, ten improved and fifteen unchanged or worse; (3) The acid values were increased in twenty-seven, of whom three were well, seven improved and seventeen unchanged or worse. Hence, the conclusion, that there is no relation between the subjective sensations of the patient and the acid values in the gastric contents, is justified.

Vandorfy¹⁸ has compared on normal individuals and patients with various gastric and duodenal disorders the findings after the ordinary single withdrawal of the Ewald breakfast and those with fractional withdrawal of the gastric contents with the Rehfuess sound retained during the period of digestion. The results were as follows: In most of the normal cases, it was shown by the fractional method that secretion lasted from one to one and one-half hours: The highest point in acidities was reached after three-fourths to one and one-half hours, when after a short period a rapid fall took place. Where hypoauidity is present, this fact is brought out more clearly by the fractional removal and the acidities were much lower than with the Ewald breakfast and single removal. Where hyperacidity is present, this was shown much more fully by the fractional method, the acidities being much higher than in the single removal.

Leschke¹³, with a test beverage containing su-

gar, alcohol, vanillin, oil of Kümmel and water, and the use of the duodenal sound, introduced after drinking this mixture and fractional withdrawal, attempted to determine the influence of regurgitation of the duodenal content into the stomach on the acid values of the gastric juice. This was accomplished by the titration of the fractions by 1/10 normal silver nitrate solution with potassium chromate as an indicator, which gave the value of free, combined and fixed chlorine (NaCl) in normal individuals. The acid curve reached its maximum in forty-five to seventy-five minutes. In the second hour the acid curve sinks rapidly, while the chlorine curve remains the same, or even rises so that they cross. This, the author maintains, is due to regurgitation of duodenal contents which normally tend to neutralize the acid of the gastric juice after the height of gastric digestion is over. This is further demonstrated by the stain of bile and the presence of pancreatic ferments. In cases of gastric sub-acidity, cancer, pernicious anaemia, gastritis and functional absence of hydrochloric acid, a true achlorhydria is found, since the acid and chlorine curves are lower and correspond. In rare cases, however, the acid values are low, while the chlorine content remains normal or even increased, so that the difficulty is not due to deficient secretion on the part of the stomach, but to an increased regurgitation of duodenal contents. In super-acidity the acid values soar, while the chlorine values remained normal. This is due, according to the author, to pyloric spasm by which the neutralizing effect of the regurgitated fluid does not take place. In gastric ulcer, no characteristic curve could be detected. In duodenal ulcer, the acid curve slowly climbs for two hours before neutralization takes place. Two other rare forms of curves are described in cholecystitis; both curves are reduced. In gastric ptosis, the chlorine curve exceeds the acid curve from marked regurgitation.

PEPSIN AND ANTIPEPSIN

Popper¹² has a new theory that the antipepsin of the serum of ulcer patients fails to protect the stomach from autodigestion. These tests were made on thirteen patients, in whom the diagnosis was made by operation. The results showed that in 50% the serum of the patient caused no checking of digestion by the gastric juice of the same individual, while in 50% it did. Furthermore, 33% of the gastric cancers gave the reaction for ulcer, i.e., failure of the serum to check digestion. The failure or success of this test depends on the acidity of the gastric contents, whether ulcer is present or not. In acidities of 48 or over, there is always a checking of the digestion by the addition of serum, no matter what the disease is from which the patient is suffering. Hence, the author's

conclusion is, that the check of digestion or lack of it by serum has nothing to do with the pepsin and antipepsin ratio, but is due to the acidity of the gastric contents, aided by the varying alkali and protein content of the serum. Hence, in no way, is it of value in the diagnosis of gastric and duodenal ulcer.

GASTRIC ULCER

Jarno⁷ has by experiment sought to learn the reason for a peptic ulcer by investigating the digestibility of gastric tissue by pepsin mixtures to which digestive elements have been added. In 50 experiments, it was found that antipeptic action took place only when bile was present, so that no real "antipepsin" exists. Furthermore, the amino acids were found to check peptic digestion. Pigs' stomachs were pressed and the juice was found to be promptly digested by pepsin, so that if antipepsin exists, it must depend for its action on the structure of the peptic cells, since when these are destroyed, it is no longer active. This pressed juice from the stomach cannot be coagulated; since any necrotic patch in the stomach is promptly digested, we assume coagulative necrosis. No increase in the amino acids were found in the stomach above other organs. As long as the cell structure of the glands is undisturbed, amino acids protect the stomach from self-digestion. When changed or impaired, the acids fail to protect. The author found hypersecretion to have no part in the causation of peptic ulcer but aggravates the granulating or healing of the ulcer and should be checked. The use of fat in diet is important; first, because it checks the secretion and encourages regurgitation or duodenal content, including the bile which protects the granulating surface from the action of the gastric juice.

DIETETIC TREATMENT OF GASTRIC ULCER

Molnar and Porges¹⁴ sought to determine the respective effects of the ingestion of fat and starch taken separately or intimately mixed on the gastric digestion, basing the results on the amount removed in forty-five minutes after eating, the free acid and the total acidity, the presence of bile and mucus in the removed contents. The results showed that neither the healthy nor the diseased stomach (chiefly old ulcers) is able to emulsify fat when taken apart from starch and not masticated with it or cooked. Furthermore, the separation of the fat or starch when eaten causes a much longer delay of fat in the stomach. In conjunction with this, fat taken apart from starch causes a much greater reduction in the amount of free acid secreted. Further efforts were made in the same way to determine the course of digestion when protein (cheese) was taken followed by starch (bread) and when eaten together.

The results were that the acidities were less when these articles were taken separately than when taken together. Hence, the conclusion is reached that the presence of starch in the stomach hastens digestion of protein and by analogy that potato hastens the digestion of meat. The comparison of fresh and stale bread in the same way showed a much greater series of high acidities in the former. In fact, the use of fresh bread causes such high acidities, determined by the titration of gastric contents, that the patients complained of heartburn and distress.

The authors' conclusions are that: (1) That fat thoroughly mixed with starch is better borne than alone; (2) The coarse starch foods are better fitted for digestion when mixed with fat; (3) That cheese is better digested when taken with bread; And (4), That old bread gives less secretion of hydrochloric acid than fresh bread.

Jarotsky⁴ seeks to provide a diet which will pass through the stomach without delay and without exciting gastric secretion. For such a purpose he chooses first white of egg, because it is senifluid and has no extractives; and unsalted butter, because the fat tends to suppress gastric secretion and has great nutritive value. He insists that these should not be given together, but at alternate periods. Two restrictions must be observed in the employment of this diet: No water must be taken by mouth or by rectum and sodium citrate must be avoided. The results of the employment of this diet are first: The almost instantaneous cessation of pain: Second, the immediate reduction of the secretion of hydrochloric acid and the contraction of the stomach walls as shown by the lessened tympanitic area. Even gastric hemorrhage does not militate against the use of this diet, for patients do better than on rectal feeding. Systematized, this diet demands on the first day the white of one egg in the morning and at 3 p. m., 20 grams of fresh butter. Each day the egg (white) is increased by one and the butter by 20 grams, so that on the tenth day the patient is getting ten eggs and 180 grams of butter. This diet fails only where there is marked pyloric stenosis. It is unnecessary to continue this diet more than ten days, when the patient can begin to take gruels of rice, tapioca, etc., with abundant unsalted butter, mashed or baked potato; no milk is to be given during the whole treatment.

Lehmann¹², recognizing the varying results following gastro-enterostomy for gastric and duodenal ulcer, has investigated the subsequent course of 93 cases after this operation. He divides them into three classes: One; where the ulcer was situated at the pylorus. Of these (73) 53 had no further difficulty, though eating as before operation anything that they fancied; thirteen were improved, though compelled to restrict their diet and had recurrence of old symptoms on any dietetic indiscretion; while

two received no relief and still had pain, eructations and vomiting.

The second class comprised those with ulcer of the lesser curvature. Of these, 8 were cured and 2 improved. Of the third group, with ulcer of the duodenum, 6 were cured and 2 relieved. Of the entire group, 67 which were cured, with the 17 improved, gave 84 out of 93 with satisfactory results from the gastroenterostomy alone.

Two cases of *circulus vitiosus* were found, both in gastric ptosis, which the author thinks tends to cause this condition. Of all these cases, only one subsequently died of gastric carcinoma one year after operation. These statistics were collected two to thirteen years after operation.

Hirschberg⁶ investigated the given symptoms of "heartburn" to determine its significance. There were 232 patients whose gastric contents were examined. Of these, 172 made no complaint of heartburn or pyrosis, while 55 did, and the history of five was indefinite. Of all those showing hypersecretion; 73% complained of pyrosis and 18% did not; while 9% were not distinctive in their complaints. Of those with normal acidities, 92% had no pyrosis while 8% did. Of those with subacidity, 81% had no pyrosis and 19% did. Of those having anacidity, 93% had no pyrosis and 7% did. Hence, the conclusions of the author are that pyrosis may occur with all grades of acidity of the gastric contents, but is, by far, more common where hypersecretion is present. A persistent pyrosis induced or strengthened by eating is very suggestive of gastric ulcer and should be very carefully investigated by gastric analysis, x-ray, etc.

DUODENAL SECRETION

Jünger⁹ in 135 patients has employed the duodenal sound to procure bile for analysis to determine the value of this method for the detection of disease of the liver and biliary passages. The method was that of Lyons. Both 10% peptone and 25% magnesium sulphate were used to release the gall bladder reflex. The group included those suffering from hepatic and gall bladder disease, gastric affections and normal individuals, controlled in the former by operation, or autopsy. The results showed an increase in the albuminous content of the bile from those with disease of the liver or biliary passages, including the gall bladder, above those not so affected. The absence of gall bladder reflex seems to be less reliable, though of 26 cases where it was absent, 22 were found subsequently to have pathological changes in the gall bladder.

His conclusions are: That there is practically unanimity between the high albumin content and the absence of the gall bladder reflex. The

microscopic examination of the bile is valuable. There was marked increase of leucocytes and crystals in cholecystitis and cholelithiasis. The bacteriology is of little value.

TREATMENT OF COLITIS

Went's¹⁹ treatment consists of an autogenous vaccine made from the stools of the sufferers from colitis, both of the mucous and ulcerative variety. The details of the manufacture of this vaccine is that of all well equipped laboratories. The principle of this treatment is not to destroy the bacteria which are so often of a harmless type, but to aid the colon in resisting their aggression. Of this suspension (vaccine) the patient receives 0.5 c.c. at first, made by hypodermic injection. After two days 1 c.c. and after another two days 2 c.c. If the case is an obstinate one, the last injection can be repeated. After the last treatment, the patient is allowed to rest with restricted diet for four or five days, and then allowed a generous diet. If the treatment has been successful, there should be no return of the diarrhoea and the patient should suffer no discomfort. The only restriction in diet after treatment is that the patient for six months should take no milk. Ulcerative colitis is much more intractable and demands at least seven injections. Furthermore, this form of vaccine gives a violent local reaction at the site of the injection, accompanied by headache and a chill, with a rise of temperature. This local reaction also has a prognostic value, since treatment should be continued until no further local reaction occurs. The series of patients treated consisted of 29 with mucous colitis, who were all relieved of their difficulty, and two of ulcerative colitis who, after remissions, were finally cured. His conclusion is, that specific treatment by vaccines far surpasses the usual local management except in cases where complications demand surgical interference.

RELATION OF GLYCOSURIA TO GASTRIC DISEASE

Van den Bergh and van Heukelom¹⁷ call attention to the frequent combination of duodenal and gastric ulcer in glycosuria. Eight patients were studied in whom a probable diagnosis in some and a positive diagnosis in others of peptic ulcer had been made by giving 50 grams of glucose fasting, and the blood sugar curve determined and compared with that of 10 healthy students, given the same amount of glucose. The curve of the ulcer patients was found to rise much higher than that of the students. Furthermore, each patient showed sugar in the urine. The explanation of this association of ulcer and hyperglycemia, the authors leave unsolved but suggest irritation of the head of the pancreas by the ulcer scar or adhesions.

PANCREATITIS

Christ² has collated 24 cases from the surgical clinic at Basle and divided them into severe and milder forms of pancreatitis. The former (severe) number 16 cases; of these one-half had suffered a long time from "stomach trouble". In all but three the present attack came on suddenly and its marked feature was unendurable pain. Thirteen individuals were immediately operated; the pancreas was found enlarged in all cases; in 10, hemorrhage into the pancreas was found; in all there was fatty necrosis of the omentum and mesentery; the biliary passages were often simultaneously diseased. In seven instances the gall bladder held many stones, and in two there was present a chronic inflammation of the biliary passages after the formation of a stone. The results were as follows: Eight recovered and eight died, chiefly from peritonitis, thrombosis and pneumonia. Of the milder cases, six were operated and apart from the diseased pancreas, the biliary passages and gall bladder were found involved in the pathological process four times, chiefly stones. As far as diagnosis goes, the author regards the detection of pancreatitis most difficult. Only twice were fatty stools found and in only three was there glycosuria. As a causative agent, cholelithiasis and cholecystitis are found most important since 16 of the cases, or two-thirds, had an associated affection of the biliary passages. The most significant diagnostic fact is the presence of a tender point at the median line or to the left of the same in the epigastrium which differentiates this disease from cholecystitis and even when other physical signs point to the gall bladder, indicates the involvement of the pancreas.

RADIOLOGICAL EXAMINATION OF THE GALL BLADDER

Eisler and Nyiri⁴ report on their experience with tetrabromphenolphthalein as well as the iodine salt, both by intravenous injection and by mouth, as contrast material for the X-ray examination of the gall bladder. They found several individuals in whom the dye did not enter the gall bladder; the causes for which are unknown. Of the clinical gall bladder cases, 19 were operated, in two of whom the gall bladder shadows could not be demonstrated. In one, there was found a contracted bladder from chronic cholecystitis and in the other cancer of the gall bladder. It was noted in the pathological gall bladders disclosed by operation that the shadow remained constant in form and size over a period of several hours, while the normal gall bladders constantly changed in these characteristics. The gall stone shadows, when present, appeared much more distinct between the intervals of contrast bile. Secondly, it was found when the gall bladder was filled with stones or

one blocked the cystic duct that no dye entered the gall bladder. Under observation of the shadow magnesium sulphate and peptone, injections were found to diminish the size of the shadow and apparently hasten the emptying of the gall bladder.

Examination was made by Roberts³ of fourteen cases by the ordinary radiological methods for gall stones and no suspicion of a shadow was found. After four hours fasting, five grams of tetrabromphenolphthalein dissolved in 40 c.c. of distilled water and boiled for 20 to 30 minutes, were slowly injected intravenously in two doses, one being given a half hour after the first. After the last of the dye was injected, a few c.c. of physiological salt solution were forced through the needle while inserted in the vein to prevent loss of the dye. Of the cases examined, ten were operated and four were not. In only one of the ten cases were the findings of the surgeon at variance with those of the radiological examination. In this case, where a pathological gall bladder was shown, only adhesions about the bile duct were found by the surgeon, which when severed allowed the gall bladder to empty.

APPENDICITIS AND LEUCOCYTOSIS

Fonio⁵ attempts to learn the severity of an attack of appendicitis by the grade of the leucocytosis present. There were studied 312 cases of which pathological examination was made of 214 removed appendicees. These naturally divided themselves into seven classes, based on the number of leucocytes, as follows: (1) Chronic appendicitis (i.e. recurrent attacks); where the white count varies from 5,000 to 10,000, i.e. a normal or slightly increased incidence; (2) Subacute appendicitis, where the count runs between 8,000 and 9,000; (3) Incipient appendicitis with a count from 8,000 to 11,000; (4) Advanced acute appendicitis, where the number varies from 10,000 to 14,000; (5) Gangrenous appendicitis with 10,000 to 20,000 present; (6) Phlegmonous form where the count ascends to 12,000 to 23,000; (7) Perityphlitic abscess where the number rises to 10,000 to 28,000. It was further found that the number of leucocytes in the pathological appendix approximated the increase in the blood. Hence, the author claims that this factor determines first the urgency of prompt operation and gives the surgeon the best indication of the severity of the condition he is to find on opening the abdomen.

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ORIGINAL ARTICLE

THE TREATMENT OF WOUNDS, TRAUMATIC AND SEPTIC WITH DICHLORAMIN-T*

BY DONALD S. ADAMS, M.D., F.A.C.S.

DURING the World War the use of chlorine compounds proved of great value. It remained for us to adapt these preparations to our civil practice. Dakin's Sodium hypochlorite solution with the Carrel technique was an ideal means of combating infection, but, on returning to civil life, I found that the proper technique, namely, perfect titration, uniform tubing and glassware, training of assistants and the necessary expense thereby involved, made its use impractical. At the instigation of Doctor Homer Gage, I began the use of the more stable preparation, Dichloramin-T, suggested by Dakin in 1917. I can now revert to nearly seven years of its use in both clean and septic wounds.

I have before me the excellent monograph by Doctor Joshua E. Sweet of Philadelphia, written in 1917 when connected with Base Hospital No. 10, France. It was to Doctors Sweet and Walter E. Lee that Dakin entrusted the practical testing of his new preparation. I have found their principles of practical value and have gained through their experience, adding certain measures acquired at the Rockefeller Institute during the War and others found through necessity in civil practice.

*From the Surgical Service of Memorial Hospital.

PREPARATION AND STABILITY

We have adhered to one method of preparation and one strength. It is prepared in the hospital pharmacy in five-hundred gram lots by adding to twenty-five grams of Dichloramin-T crystals, which may be obtained from any good wholesale drug house, enough Chloroform, prepared by Abbott to make five-hundred grams by weight. The crystals dissolve in the Chloroform when agitated in a water bath at seventy to one-hundred degrees F. This five per cent solution we have found adequate for all purposes and I have not attempted the use of twenty per cent solutions as used under certain conditions by Sweet in his original work. The freshly made solution is distributed in four ounce brown bottles and kept on the wards, preferably in a cool, dark place. It is quite stable under these conditions and until a clouding or sedimentation takes place may be considered dependable.

USE IN TRAUMATIC SURGERY

In all work of this kind I have first had the affected parts shaved, cleansed with benzene and seventy per cent iodine applied. I have not seen any contra indications to this form of preparation before the use of Dichloramin-T. The debridement and repair are then done, the affected parts thoroughly covered with Dichloramin-T and partial or complete closure of skin completed. The degree of skin closure in this type of wound I consider of importance.

With injuries created in a clean manner or where total excision of affected tissue may be accomplished, complete closure is feasible, leaving a few strands of silk worm gut or small Penrose tubing to give vent for serum. This type of closure, however, except in amputations, I have rarely attempted, being content to lean toward the conservative side and do but little primary closure.

In the average case, coming from street, railroad or shop, it has been my habit to consider the wounds as essentially infected and treat accordingly. The benzene and iodine preparation is used, debridement done and deep parts of wound packed with gauze strips, saturated with Dichloramin-T. Where bone is compounded, unattached fragments are removed as completely as possible and the area directly above bone ends made the seat of a gauze strip with Dichloramin-T applied. Another on a more superficial level takes care of the soft parts. External wet dressings are applied in the form of hot saline or saturated boric acid solution. The first dressing is usually done in forty-eight hours. Packs are carefully removed and parts either sprayed with an all glass atomizer or fresh Dichloramin-T applied to surfaces with cotton swabs. Packs are now left out and wet dressings applied, unless there is still a large degree of dead space when it would be safer to replace gauze strips with Dichloramin-T for

another forty-eight-hour period. At third forty-eight-hour period, if culture and smear prove negative, secondary closure may be done, or what I have found more satisfactory, the gradual closure with strips of adhesive.

In head injuries, Dichloramin-T may safely be applied to dura and subdural structures. In abdominal injuries its use is not advised.

USE IN SEPSIS

The affected part, after adequate opening has been made, is packed with gauze saturated with Dichloramin-T. The skin edges are wiped off and sterile zinc oxide ointment freely applied. Hot, wet, dressings are then placed over the wound. The first dressing in septic cases should be done within twenty-four hours and thereafter every forty-eight hours. Zinc oxide ointment is applied each time and the wet dressings continued. A clean granulating surface is usually noted within seventy-two hours after operation. When the wound reaches that state, it may be merely swabbed or sprayed with Dichloramin-T and a dry or wet dressing applied. The use of gloves for these dressings, as well as in the traumatic cases, is a distinct advantage, especially in the larger wounds where metal instruments may be avoided; the excess Dichloramin-T is squeezed back into the medicine glass and the pack introduced with the gloved hands. From the simple, localized infection to the more extensive processes with and without bone involvement the same technique has been adhered to.

I have not used Dichloramin-T on burned surfaces or in suppuration affecting either pleura or peritoneum.

It is true that the average man looks upon another's results with skepticism. And it is for that reason that I have not attempted to cite statistics bearing on numbers and types of cases and brevity of stay in hospital, yet I may conclude from my own cases that the use of Dichloramin-T has resulted in five observations:

1. Simplicity and uniformity in technique easily acquired.
2. A minimum of expense.
3. A rapid acquisition of healing surfaces, associated, it is true, with an unpleasant burning sensation for the first few minutes after the earlier dressings, yet compensated by the lack of toxic symptoms presented by an unclean surface.
4. Favorable response in bone conditions, as osteomyelitis and compound fractures. In one, the tendency to heal without sinus and sequestra formation and in the other the ready appearance of good union. It can well be said that in both these instances, the primary operation largely governs these results, yet to acquire and maintain sterility, is to my mind, no minor secondary factor.
5. Total absence of gas bacillus infection.

Case Records
of the
Massachusetts General Hospital

ANTE-MORTEM AND POST-MORTEM RECORDS AS USED IN
WEEKLY CLINICO-PATHOLOGICAL EXERCISES

EDITED BY

RICHARD C. CABOT, M.D., AND HUGH CABOT, M.D.
F. M. PAINTER, A.B., ASSISTANT EDITOR

CASES 12161-12166

SURGICAL DEPARTMENT

[The following cases were selected by Dr. Harner from a larger group presented at the Massachusetts General Hospital at the monthly clinical staff meeting March 11, 1926. He intends to publish a detailed study of his entire group of a hundred and twelve cases later. Meantime he has prepared for us the following brief paper in order that this series of Case Records, in representing various lines of work being done in this hospital, may include a field of especial economic, social and surgical interest.]

RICHARD C. CABOT.]

CASES OF TENDON AND NERVE REPAIR

BY **TORR WAGNER HARMER, M.D.**

The principle of immediate active motion of sutured tendons without splinting. The principle of immediate active motion of sutured tendons with partial restriction of opposing muscles in cases with coincident nerve suture.

The repair of tendons and nerves, i.e., the repair of tendons, or of tendons and nerves coincidentally injured, is a small field of endeavor, but a fascinating one and one economically important. It is a field of endeavor in which our successes are most gratifying and our failures most glaring. My little family now comprises 112 cases. These are mostly hands and wrists. There are few of us who are not very dependent upon our hands. Failure to repair or a poor attempt at repair of a hand of an uneducated laborer with a wife and small children means calamity to that whole family.

Have you ever studied an infant's hand and its movements? How much is contained in that small compass! There are the tiny ulnar twigs to the opponens and flexor brevis minimi digiti, the two inner lumbricales and the inner head of the flexor brevis pollicis. There are the tiny median twigs to the outer head of the latter muscle and the two outer lumbricales. If we cannot satisfy ourselves of the presence of these, we can satisfy ourselves of the presence of the ulnar twigs to the abductor and adductor interossei and the median twig to the opponens pollicis. What a wonderful movement is the apposition of the flexed thumb to the flexed fore-

finger! If we always have before us this picture of delicate architecture and mechanism, our technic will be gentle and deliberate.

Quite as important as our operative technic—I believe more important—is patient painstaking after-care. We attempt an anatomical reconstruction followed by a restoration and maintenance of function.

(At this juncture were shown three little children:—

1. W. R., aged nine (Case 12161), who twenty-two months previously had severed with an axe all the extensor tendons at the back of the left wrist. These were sutured with a perfect functional result.

2. W. B. H., aged seven, who ten months previously had fallen on a tile floor with a tumbler in his right hand and received a jagged lacerated wound across the palm. Anatomical restoration shows a slight adhesion of the flexor profundus digitorum of the ring finger. Otherwise, the hand is perfect.

3. D. M., aged four (Case 12162), who eleven months previously had severed with glass all the structures on the anterior surface of the wrist except the ulnar nerve and the flexor carpi ulnaris tendon. Anatomical reconstruction has been followed by perfect functional result.

Dissections of two hands were then shown especially to demonstrate the relations of the structures to the anterior annular ligament and their compactness beneath it.)

There is a definite arrangement of all these structures. The small compass in which they are crowded shows the great facility with which tendons and nerves sutured in this situation may become agglutinated by adhesions. Impressed by this fact sixteen years ago, the necessity of immediate motion after suture of the tendons was evident. The necessity of a method of suture which would withstand immediate motion was also evident. Such a stitch has been used since 1909 and has been previously described.* In the absence of coincident nerve suture, no splint is used. In case of coincident suture of one or more nerves, the part is held in an appropriate splint to prevent any strain on the sutured nerves, but does not limit such movements of the fingers as are executed by the coincidentally sutured tendons. In other words, following a repair of all the tendons and both the ulnar and median nerves on the anterior surface of the wrist, the wrist is held by a splint in partial flexion to relieve the strain on the sutured nerves, but the fingers are free to permit immediate exercising of the sutured tendons. Passive motion if too gentle is inadequate; if too vigorous is harmful. Waving the fingers back and forth at their metacarpophalangeal joints is neither purposeful nor intelligent nor

**Bost. Med. & Surg. J.* 1917, Dec. 6. *Surg. Clin. N. A.*, 1921, June, pp. 892-831; and 1922, Aug., pp. 973-994.

efficient. The very day the patient has been operated upon, when sufficiently recovered from his anesthetic, he is personally instructed in the active movement of each phalanx of each finger. He repeats these exercises every hour by himself, but at some time every day he is personally supervised and instructed in these exercises.

(Dr. Harmer then told when and how he instituted muscle massage, passive motion and electrical stimulation.)

Time does not permit detailed description of the operative technic, but it may be expedient to mention a few points. Let us suppose that we have just been called to see a patient with a lacerated wound across the anterior surface of the wrist. The wound is looked at but not into. There is no excuse for increasing the trauma or the possibility of infection by meddling some poking in the wound. The wound is at once covered with a sterile dressing. Then, beginning with the thumb, the patient is requested to flex each phalanx of each finger. If some tendons are intact, some of these motions can be executed even if both the median and ulnar nerves be divided at the wrist; for these are gross movements of the hand and the muscle bellies of these tendons are innervated high in the forearm. We must then test the integrity of the nerves by requesting the patient to use the intrinsic muscles of the hand, i.e., abduction and adduction of the fingers and adduction of the thumb for the ulnar, and apposition of the thumb for the median. The temperament of the patient may make sensation tests unreliable. I have not yet tried Tinell's method. Before the anesthetic is started we therefore have a very definite idea of the task before us. No tourniquet is used. Operations of this kind are apt to be long and the constriction harmful. Furthermore, during the use of the tourniquet tiny vessels may become thrombosed which may start oozing after the wound is closed upon the institution of immediate active motion. This means hematoma, which is very undesirable in work of this kind. Again, without the use of the tourniquet all bleeding may be checked within a few minutes after operation is started. Then we are fresh and our sponging will be deliberate. Whereas if a tourniquet is removed after a tedious operation we may inadvertently indulge in rough wiping. In the case above noted, an incision from the middle of the palm one third way up the forearm would be at once made and the annular ligament divided. This wide exposure reduces to a minimum the trauma incident to the identification of the severed structures. As the tendons are identified, each severed end is provided with a suture (No. 7 black silk) and laid aside for subsequent tying. As soon as the first needle thrust has carried the silk through the edge of the tendon, the silk is tied with a single knot and used as a guide in completing the other two turns of the overcast-

ing stitch. This single initial knot has not been described in my previous papers on this subject. In all other respects the stitch is exactly the same as previously described. Holders, clamps and other devices are not only not necessary, but add trauma. The nerves are united with tiny interrupted silk sutures, barely catching the outer sheath. Experimenters in nerve suture have pointed out the necessity of accurate approximation without rotation of the nerve ends so as to bring the cut surfaces together, as far as possible, in their former relations. The tiny vessel on the anterior surface of the median nerve is an excellent marker. A tiny stitch through the outer sheath is passed to one side of this vessel and then across to the other nerve end, catching the sheath at a corresponding distance from the vessel. If upon drawing up on this stitch and approximating the nerve ends it is found that this has not been exactly accomplished, the stitch is not tied, but is used as a guide, pulling gently this way or that way on one or the other of its two ends so as absolutely to align the tiny vessel. With this guide stitch so held a second suture may be passed with perfect accuracy and at once tied, its uncut ends being used to rotate the nerve ends for the application of the next stitch. Before each stitch is tied a few drops of salt solution are dropped with a small glass syringe into the gap between the nerve ends in order as far as possible to insure freshness and moisture. When all the tendons have been tied together from within outwards the nerves are sutured as above described. The annular ligament is caught together in its proper relation to the structures with a couple of silk stitches. The fascia of the palm and wrist are united interruptedly with similar material and either silk or fine silk worm is used in the skin. None of these 112 cases has been drained, not even with a few strands of suture material.

In concluding, I wish to express my appreciation to the members of the Surgical Staff of the Massachusetts General Hospital, through whose courtesy I have been granted a special assignment in tendon surgery for a number of years. This has made possible the application of this stitch, and the development of the principles of immediate active motion of sutured tendons without splinting and of immediate active motion of sutured tendons with partial restriction of opposing muscles in cases with coincident nerve suture.

(Lantern slides were shown, illustrating some previously reported cases and some new cases. Fifteen end-results were shown illustrating nerve suture and tendon suture, tendon grafting, pedicle grafting, etc. A few of these are herewith illustrated.)

NOTE

The small black dashes on some of the illustrations indicate the limits of the accident wound or of the surgical wound.

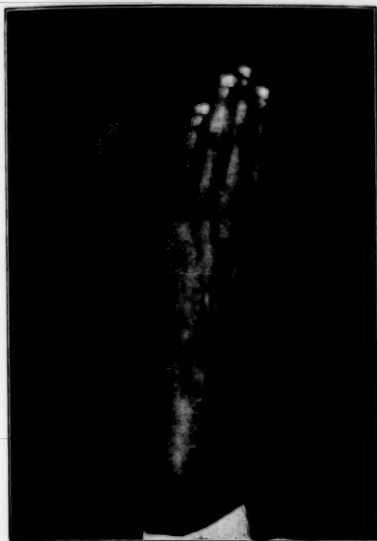


PLATE 1

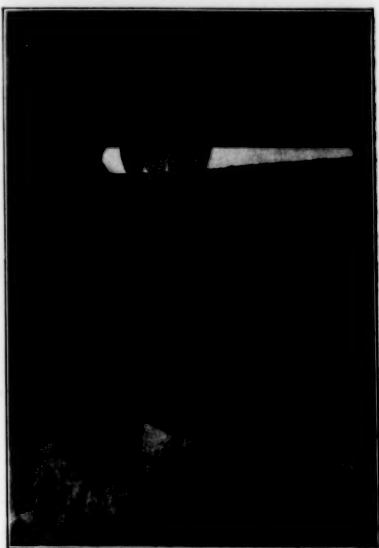


PLATE 3

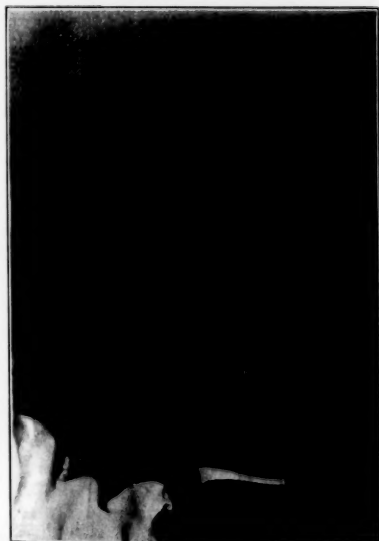


PLATE 2

CASE 12161

Plates 1, 2 and 3

Boy, aged seven, a few hours previously had severed with an ax all the extensor tendons at the back of the left wrist. Sutured. No splint. Immediate active motion. Pictures taken twenty-two months later show complete extension of fingers and no limitation in flexion of sublimis or profundus tendons.

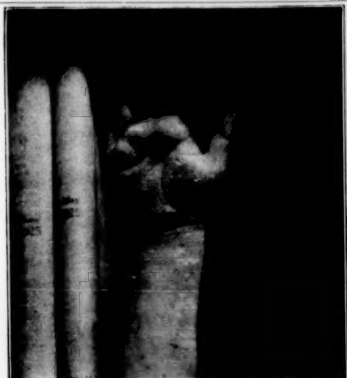


PLATE 4



PLATE 7



PLATE 5



PLATE 6

CASE 12162

Plates 4, 5, 6 and 7

Girl, aged three, several hours previously received severe wound across anterior surface of wrist with glass, dividing all structures except the ulnar nerve and flexor carpi ulnaris tendon. Suture of all other tendons and median nerve. Immediate active flexion of all fingers and thumb with partial restraint of extension. Photographs taken eleven months later show complete extension and flexion of fingers and perfect apposition of thumb. The case is interesting from small size of parts and the use of the hand in playing with small squeaking rubber toys to secure active movements.



PLATE 8



PLATE 9



PLATE 10



PLATE 11

CASE 12163

Plates 8, 9, 10 and 11

All structures across wrist, including both ulnar and median nerves, severed by glass. Suture several hours after accident. The plates show complete flexion and extension of all phalanges without adhesions as shown with fingers and wrist extended. The plates show well developed thenar and hypothenar eminences. Plates 8 and 11 show the ulnar action through the interossei. Pictures taken nineteen months after accident. Perfect functional result.



PLATE 15

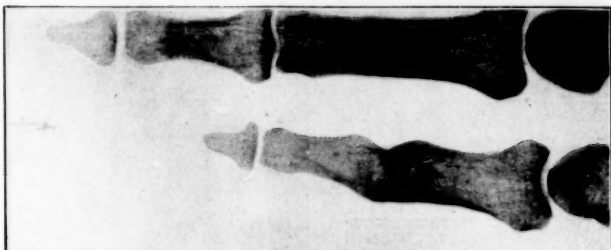


PLATE 14



PLATE 13



PLATE 12

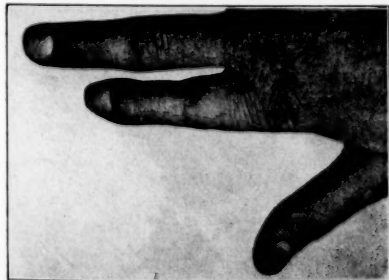


PLATE 16



PLATE 17



PLATE 18

CASE 12164

Plates 12-18

Compound fracture of head of proximal phalanx of right forefinger involving joint. Seen several months after accident (catching finger in machine gear). Proximal interphalangeal joint was then nearly ankylosed, much deformed, and very painful. The outer phalanges were somewhat rotated on the proximal phalanx. The terminal phalanx could not be voluntarily extended on account of severed extensor tendon. X-rays at this time are shown in Plates 12 and 13. The man was a clerk. The forefinger was important to him, especially the tactile distal phalanx. To save the finger and render it painless and useful in writing the following operation was done. Through a long lateral incision which does not show in the plates the joint was excised in such a manner that the bevelled ends when drilled and tied together would form a single bone concealed on its palmar aspect (to simulate the slightly flexed forefinger position of writing). Plates 15, 17 and 18 show this curvature of the united bones. The extensor tendon was then sutured. Plates 15 and 16 show the phalanx extended. Plates 17 and 18 show it flexed. Although the finger is short, it is painless and very useful. The patient is still an excellent penman. Photographs taken three years after operation.



PLATE 19

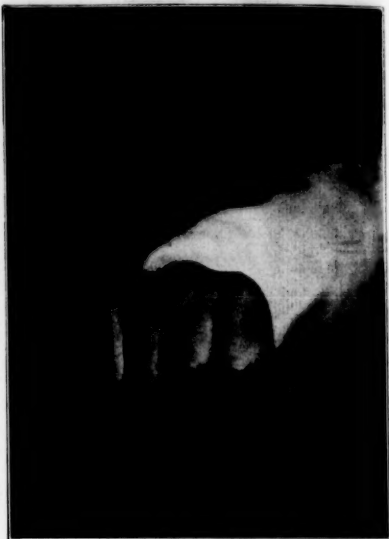


PLATE 21



PLATE 20

CASE 12165

Plates 19, 20 and 21

Compound fracture of third metacarpal two months and a half before operation. At time of operation deformity of knuckle with great amount of synovitis and inability to extend little finger. At operation irregular bone fragments removed from joint. Distal end of tendon found adherent in scar tissue between third and fourth knuckles. Joint closed. Tendon freed, trimmed and sutured. Patient resumed his former occupation, mechanic in automobile shop, twenty-one days after operation.

The linear scar is the operation scar; the curved scar is that of the original wound. The plates show complete restoration of extension of finger, preservation of complete flexion of finger, and cure of synovitis.



PLATE 22



PLATE 24



PLATE 23

CASE 12166

Plates 22, 23 and 24

Mrs. G. Diffuse tuberculous tenosynovitis involving wrist, passing beneath annular ligament and involving palm. Several years' duration. Filled with rice bodies, with marked impairment of flexion of fingers and thumb. Incision as indicated in plates with complete dissection of wrist and palm. Pathological tissue "skinned off" tendons. Flexor sublimis of forefinger removed from base of finger to wrist on account of extensive involvement in process. The plates show profundus tendon of this finger acting satisfactorily in absence of sublimis. The plates show excellent flexion of fingers and thumb and unrestricted extension.

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THE SINGLE STANDARD FOR MEDICAL PRACTICE

The following editorial from the *New York World* is reprinted in the *Boston Herald* of Sunday, April 11:

A BILL FOR HONEST MEDICINE

(From the New York World)

If the Webb-Loomis bill for the better control of the practice of medicine errs at all, it is on the side of mildness rather than severity. Drawn up with the aid of the State Medical Society and State Board of Regents, it has been indorsed by most of the county medical societies. It does not put anyone out of business except those who misrepresent their business. Chiropractors and drugless practitioners may continue to receive patients and charge fees. But henceforth they must never do so under the pretence that they are licensed physicians or doctors of medicine.

The teeth of the bill are found in four requirements: that all practitioners of medicine shall be registered and licensed; that osteopaths and physiotherapists possessing at least two years' training in an approved school may be licensed to follow their respective occupations, but shall not administer drugs or perform surgical operations; that no such person shall be permitted to use "the title 'doctor' or any abbreviation thereof in connection with his name or any trade name," and that in any action for damages for death or personal injury the practice of medicine without a license shall be held presumptive evidence of negligence.

In other words, a distinct line, obvious to the most

ignorant, would henceforth be drawn between the regular physician or surgeon and the graduate of some short-cut school of drugless healing. What is severe about this? Why should the chiropractor who believes in his profession object to it? It is simply a bill for making all treatment of human ailments honest.

It may be unfair to criticise the bill without full knowledge but judging by the quotations above, it seems to be based upon what the JOURNAL regards as false premises.

Sound registration laws are intended to protect the public. Registration of a physician certifies that he has the requisite knowledge to undertake the diagnosis and treatment of disease. The Massachusetts Medical Society and the Massachusetts Homeopathic Medical Society maintain that there shall be only one standard of fitness for this work. The Massachusetts Board of Registration in Medicine contains members of each of these Societies and the Secretary of the Board is an osteopath. The State considers this Board primarily the guardian of the public and the Board accepts this concept as the foundation principle on which it operates. It was established to insure competence on the part of those caring for the sick. The Commonwealth in no way dictates the methods of treatment to be employed, except in the laws against neglect and crime.

The JOURNAL advocates this single standard of fitness because it is for the public good. If any person wishes to go to a physiotherapist for treatment there is no legal reason against this, so long as no attempt is made to diagnose disease and to prescribe treatment. If any person wishes to go to an osteopath or to a chiropractor to be examined, to have a diagnosis made and to have treatment prescribed, there is no legal objection provided the person consulted has proven to the Board of Registration that he is fitted to diagnose and treat disease. The question is not one of allowing certain practitioners to diagnose by certain methods and to treat by restricted procedures. The stand of the organized medical profession of Massachusetts is that all practitioners shall have adequate knowledge in those fundamental sciences on which the practice of medicine is based and that then they may be free to adopt whatever methods of diagnosis and treatment knowledge and conscience dictate.

The creation of special boards and special examinations for the registration of those who would be debarred from the use of drugs and from the performance of surgical operations are measures which completely overlook the one just object of registration, namely the protection of the public from those incompetent to diagnose and to treat disease.

Criticisms are especially applicable to the bill as amended. The *New York Times* in an editorial refers to this bill as a good bill that has

been spoiled and calls upon the medical profession to work for its rejection.

The title of the bill should be changed to read: A bill to require standards for graduates in Medicine and to give special privileges to certain unqualified practitioners.

THE LIMITATIONS OF PREVENTIVE MEDICINE

The striking conquests of preventive medicine in the fields of smallpox, typhoid fever, and the diseases due to animal parasites tend to breed a false confidence and we are tempted to rest on our laurels, proudly recounting our glorious achievements. While we can speak of concrete accomplishments in the control of diphtheria or the eradication of hook-worm disease, we are content to prate vaguely of "hygienic living" and low protein intake for the prevention of arteriosclerosis, nephritis, arthritis or hypertension.

It is very striking that the diseases in which prevention and treatment are most successful are those due to animal parasites. Hook-worm disease, malaria and amebic dysentery are being brought under control; treatment for trypanosomiasis and syphilis is well established; yellow fever is being stamped out. In some of the acute diseases due to bacteria preventive medicine has made great strides—of this the mortality and morbidity rates of typhoid fever and diphtheria speak eloquently.

But who can tell us how to prevent pneumonia? Or, for that matter, how well can we ward off even the common cold under the crowded conditions of modern life?

Among the chronic diseases cancer steadily increases its toll of victims. The incidence of diabetes grows greater year by year, and though in insulin we have a powerful weapon against it, we have no sure knowledge of how the disease may be prevented. Arterio-sclerosis and nephritis are not becoming less prevalent.

The prestige of preventive medicine will be enhanced by cutting away the dead wood and teaching only the known facts. The things which today we think might be of value from a preventive standpoint may be discredited by the knowledge of tomorrow. Preventive medicine has made great advances, but for the sake of its own development the uncharted portions of the field should be kept clearly in mind.

FATAL VACCINE ENCEPHALITIS

Under this caption the Medical Liberty League, Incorporated has distributed a circular setting forth that "sleeping sickness of an exceedingly serious nature has appeared as a recent development following smallpox vaccination in Europe." The circular further gives

an account of several cases of encephalitis following vaccination.

Wherever children are vaccinated some cases of illness will follow. Illness will also occur in many cases which have not been vaccinated. Those who do not believe in vaccination seem to think that recovery does not take place after the infection of vaccinia but that the malign influence of this infection lasts through life. The great number of minor infections with which human beings are afflicted are not considered by the antivaccinationists as having any similar effect as vaccinia. Neither vaccination or many other minor infections have prevented the added years recorded in the average longevity of the human family. We are very sure that without vaccination smallpox would have a very definite influence in reducing the average length of human life.

Practically every child has suffered with some infections and those who have survived often live to a good old age. Those who have later developed disease according to the reasoning of opponents of vaccination must in many cases have been made ill by reason of a previous vaccination.

This reasoning is a perversion of statistical evidence about as logical as the suggestion that sleeping in bed is dangerous because most people die in bed. The specific claim of these opponents is that vaccination awakens dormant infections. We would like to have them tell us whether smallpox awakens dormant infections and if so, is it more potent or less so than vaccination.

Many children have boils, infected incisions, etc., but no one has yet assumed so far as we know that these infections predispose to encephalitis any more than that any debilitating condition may diminish resistance.

The circular only cites a comparatively few cases of encephalitis following vaccination. In one analysis there were 34 cases of encephalitis in more than 240,000 vaccinations. If this is regarded as proof, we cannot feel that this reasoning is logical.

The concluding statement will not appeal to those who are familiar with smallpox:—"These possible dangers are incurred, not in the course of applying a desperate remedy in a desperate emergency, but in the inoculation of perfectly healthy children in the hope of protecting them against a disease (smallpox) to which they are in the highest degree unlikely ever to be exposed, and which, in the light of the mortality statistics in this country during the last 25 years, if contracted, is likely to be no more serious than chickenpox."

Please read the mortality statistics for the past dozen years compiled by Dr. S. B. Woodward. There is practically no mortality from chickenpox but smallpox slays its thousands in the United States.

THE ANNUAL MEETING OF THE MASSACHUSETTS HOMEOPATHIC MEDICAL SOCIETY

The eighty-sixth annual meeting of this society was held at the Evans Memorial, April 15, 1926. Papers were read by William L. Krieger, M.D., John A. Rockwell, M.D., William P. Defriez, M.D., Plumb Brown, M.D., William A. Ham, M.D., and Marguerite E. Liehthenthaler, M.D.

The annual dinner was held in the evening at the Hotel Brunswick. After dinner addresses were delivered by Professor George L. Kittredge of Harvard University who spoke on "Witchcraft and the Doctors" and Dr. Conrad Wesselhoeft who explained the "Present Position of the Massachusetts Homeopathic Medical Society."

The officers elected are: President, Dr. Clifford D. Harvey of Brookline; First Vice-President, Dr. Cecil W. Clark of Newtonville; Second Vice-President, Dr. Joel L. Melick of Worcester; Recording Secretary, Dr. Nathan H. Garrick; Treasurer, Dr. Milo C. Green; Corresponding Secretary, Dr. Conrad Wesselhoeft; Chairman, Board of Censors, Dr. Edward S. Calderwood.

A MEMORIAL MEETING TO DR. EUGENE R. KELLEY

THE friends of Dr. Eugene Robert Kelley met in Ware Hall, Boston Medical Library, April 13, 1926, to honor the man who had faithfully served the Commonwealth of Massachusetts first as Deputy Commissioner of Health and later as Commissioner. More than one hundred physicians and others were present.

Rev. Daniel I. Gross of Portland, Maine, a classmate of Dr. Kelley at Bowdoin, paid a warm tribute to Dr. Kelley as a man, setting forth his earnest devotion to all good causes and his interest in his fellow creatures. Dr. Allan J. MacLaughlin, who was associated with Dr. Kelley, spoke of those qualities which made him successful in his chosen field. Dr. George H. Bigelow, who succeeded Dr. Kelley, was in charge of the meeting and gracefully alluded to the striking qualities of Dr. Kelley and introduced the speakers.

Dr. James S. Stone, President of the Massachusetts Medical Society, Dr. Milton J. Rosenau of the Harvard Medical School, Dr. Timothy Leary, Medical Examiner for Suffolk County and Dr. Samuel B. Woodward of Worcester, an Ex-President of the Massachusetts Medical Society, testified to the high standing of Dr. Kelley.

THIS WEEK'S ISSUE

CONTAINS articles by the following named authors:

PARMENTER, DERRIC C., A.B., M.D. Harvard Medical School 1917; Member, American Public Health Association; Instructor in Industrial Medicine, Harvard School of Public Health; Physician to Special Clinics, Massachusetts General Hospital. His address is Massachusetts General Hospital. Associated with him is

DUBREUILH, SUZANNE, a Social Worker in the Industrial Clinic at the Massachusetts General Hospital. The subject of their paper is "Skin Diseases in an Industrial Clinic," page 709.

SWAN, WILL HOWARD, M.D. Harvard Medical School 1891; Physician to Beverly (Mass.) Hospital 1894 to 1899; Now Staff, Glockner and Bethel Hospitals, Colorado Springs. Associated with him is

BORTREE, LEO W., M.D. Harvard Medical School 1910; Member Staff, Glockner and Bethel Hospitals and Sunnyrest Sanatorium, Colorado Springs. They write on "Addison's Disease—With Report of Cases," page 712.

HOLMES, ARTHUR D., B.S., Ph.D. Johns Hopkins University 1911; Teaching Record Laboratory Assistant, Dartmouth College, 1905-1906; Instructor in Chemistry in University of Maine, 1906-1907; in Massachusetts Agricultural College, 1907-08 and Georgia School of Technology, Sept. 1911-Dec. 1911. Research Chemist, U. S. Dept. Agriculture, Dec. 1911-1918; Research Chemist, U. S. Department Agriculture, Dec. 1911-1918; Research Chemist, E. I. Dupont Co. 3 years and at present Director of Research, The E. L. Patch Co., Stoneham, which is his present address. Member, American Association for Advancement of Science and other societies. The subject of his paper is "Modern Cod Liver Oil as a Source of Fat-Soluble Vitamins," page 714.

GARDINER, JOHN C., Superintendent, Springfield Hospital, Springfield, Mass. His paper is on "Autopsies," page 724.

CHANDLER, ARTHUR H., President, Massachusetts Funeral Directors' Association. His subject is "Requirements for Co-operation Between Hospitals and Funeral Directors," page 728.

AUSTIN, ARTHUR EVERETT, A.B., A.M.; M.D. Harvard Medical School 1887; Professor of Clinical Medicine, Tufts Medical School; Formerly Professor of Bio-chemistry, Tufts, University of Virginia and University of Texas. Formerly Physician to Boston Dispensary, etc. His subject is "Progress in Gastroenterology in 1925," page 732. His address is 270 Commonwealth Ave., Boston.

ADAMS, DONALD S., M.D. University of Vir-

ginia 1917; F.A.C.S.; Junior Attending Surgeon, Memorial Hospital, Worcester; Surgeon and Gynecologist to Out-patient Dept., Memorial Hospital, Worcester; Assistant Surgeon, Boston and Albany Railroad; Surgeon to Morgan Construction Co. Hospitals, Worcester. His subject is "The Treatment of Wounds, Traumatic and Septic with Dichloramin-T," page 737. His address is 28 Pleasant St., Worcester.

LEGISLATIVE NOTES

HOUSE Bill 1400, is an act providing for certain improvements at the Barnstable County Sanatorium and enlarging the purposes of said Sanatorium. Section two of this bill refers to the raising of money for the purpose of carrying out the provisions of the bill, and Section three provides, after certain amendments, that in addition to the care and treatment of persons ill with tuberculosis and other diseases, persons ill with cancer and other chronic diseases (except mental diseases) may be admitted.

House Bill 1401, an act relative to the registration of Optometrists, is a redraft of the law relating to this practice with amendments.

MISCELLANY

WEEKLY HEALTH INDEX

TELEGRAPHIC returns from 68 cities with a total population of twenty-nine million for the week ending April 10, indicate a mortality rate of 17.4 as against 14.0 for the corresponding week of last year. The highest rate (26.1) appears for Cincinnati, Ohio, and the lowest (7.9) for Fort Worth, Texas. The highest infant mortality rate (243) appears for New Bedford, Mass., and the lowest for Norfolk, Va., which reported no infant mortality.

The annual rate for 68 cities is 16.3 for the fifteen weeks of 1926, against a rate of 14.5 for the corresponding weeks of 1925.

Influenza and pneumonia are responsible for the higher death rates. A tabulation of deaths from influenza and pneumonia for the last ten weeks is included in this issue of the weekly Health Index.

THE CAMPAIGN FOR THE PHYSICIANS' HOME

THE movement for the purpose of raising the funds for the endowment of this project is going forward.

The Pennsylvania and Illinois territories are being organized.

On the evening of April 11 a benefit concert was staged in the Metropolitan Opera House with receipts of over \$25,000. A similar performance will be given in Boston at an early date.

Governor Fuller has written a letter of endorsement which we have been asked to publish:

The Commonwealth of Massachusetts
Executive Department
State House, Boston

April 1, 1926.

Mr. Victor B. Kiefbeck,
New England Director,
National Endowment Fund Campaign,
The Physicians' Home, Inc.,
Boston, Mass.

My dear Mr. Kiefbeck:

The movement to establish an endowment fund for a Physicians' Home is one that should commend itself to the public generally. The splendid service which is rendered by physicians and surgeons in every community throughout our great country is such that the appeal should be successful beyond all question. The service of the country doctor as he goes his rounds in all kinds of weather is the highest type of service to humanity.

It is a most worthy cause.

Very truly yours,

(Signed) ALVAN T. FULLER.

SMALLPOX IN MASSACHUSETTS

APRIL 1st certain persons left Orlando, Florida, by motor for Upton, Mass. They camped beside the road with the exception of one night spent in an inn in Maryland, on April 8th. They reached Upton late Saturday, April 10th. The son of the party was sick and was seen by a physician on April 11th. After consultation the diagnosis of smallpox was made on Monday, April 12th, and the cases were quarantined.

The four persons with smallpox had *never been vaccinated*.

The cases were: the father, 49, who developed his eruption in Florida on March 13th; his wife, 48; the son, 22; and a granddaughter, 15 months, the latter developing eruption on April 10th. The three in the party who did not develop smallpox had all been vaccinated. Their vaccination histories are: girl of 18, vaccinated at age of 5 and shows scar; boy of 9, vaccinated at age of 5 and shows scar; woman of 73, vaccinated at age of 9, showing a slight scar. It would not be surprising if the woman vaccinated 64 years previously should develop a mild attack of smallpox since this is a long period for the immunity to persist. She has been re-vaccinated as well as the others exposed. All contacts have been vaccinated and are under daily observation.

THE DIABETIC DEATH RATE

WITH the use of insulin the death rate in diabetes declined during 1922-23-24 in New York City. In 1925 the rate rose in this city. This change in death rate in this disease appears to be general throughout the country. This is believed to be no reflexion on insulin but rather on the omission of the treatment. Many

patients have supposed that insulin cured diabetes and after having obtained relief and believing that a cure had been brought about have resumed the use of deleterious foods. Physicians must carefully explain the necessity for the intelligent use of insulin, constant watchfulness and careful attention to dietary regulations. Otherwise disaster is very sure to follow.

THE RESIDUAL EFFECT OF WAR GASES

THE Director of the U. S. Veterans' Bureau has appointed a board of physicians to study the residual effect of war gases.

The members of the Board are:

Dr. A. K. Krause, Member of Group on Investigation and Research of the Medical Council of the U. S. Veterans' Bureau; Associate Professor of Medicine, Johns Hopkins University Medical School.

H. L. Gilchrist, Lt. Col. M. C., U. S. Army; Chief, Medical Research Division, Chemical Warfare Service.

Dr. Philip B. Matz, Chief, Medical Research Subdivision, U. S. Veterans' Bureau.

The study will necessitate the investigation of the present or recent condition of upward of 70,000 ex-service men of whom there are hospital records of having been gassed.

Because of the uncertainty which still exists concerning the more permanent disturbances that may be attributable to gassing received in the war, the importance of such a study with the large amount of material available is obvious.

It is felt by the members of the Board that the opinions of clinicians of large experience and others who have been particularly interested in the subject can assist it greatly in solving what it feels is really a very difficult medical problem.

The Board is not concerned with the better known and more immediate effects of war gases. It particularly desires information on several points:

1. Does any war gassing received in action result in disability which is relatively lasting and permanent?
2. Does it cause lasting anatomic (pathological) changes, with or without disturbance of function (symptoms and disability)?
3. What organs or systems may thus be permanently affected or disturbed?
4. What symptomatology may exist under these circumstances?
5. If war gassing does produce relatively permanent effects, may a similar condition or conditions be produced by other agencies (diseases such as influenza, tuberculosis, effort syndrome, etc.)?

The term "lasting" or "permanent", as used above, means such late residual or remote changes that continue down to the present time and are appreciable.

The Board will appreciate the coöperation of physicians in the projected study in the way of any information which one may be able and willing to contribute to it out of personal experience. It will welcome impressions and firsthand opinions on the above points. Of course, it is understood that remarks are for official use and not to be used in any other way unless with consent of the writer.

A SUMMARY OF THE TUBERCULOSIS SURVEY IN BOSTON

BEGINNING early last summer the Health Department undertook one of its periodic surveys to determine the present condition of the 12,540 cases of pulmonary tuberculosis which according to our office records were presumably alive and living in Boston.

Of these 12,540 cases, 9,106 were found to be still alive and living in the city.

The fluctuating character of an American urban population is well indicated by the fact that of the remaining 3,434 cases, about 3,000 were so completely lost as to make it impracticable to try to find them or to learn what had become of them with the resources at the command of the Boston Health Department. It may be assumed that nearly all had left the city. The survey served to show that at least half of the 12,540 cases standing in official records were still alive somewhere.

One unexpected fact brought out by the tabulation of the results of the survey was the information that of the 12,540 cases officially reported as tuberculosis, 141 cases were subsequently declared not to be cases of pulmonary tuberculosis at all and request made that the diagnosis be withdrawn.

According to official records, as corrected by the survey, there are at present living in the city, 1,040 persons in whom pulmonary tuberculosis was discovered during their school age. As this includes those already known six years ago to have had pulmonary tuberculosis during their school age, as well as those who may have been reported since then, the number of school children in Boston officially known to have pulmonary tuberculosis at the time the State Health Department began actual examination of Boston school children last autumn, may be placed at less than 1,000. Some of the tabulated results of the survey are shown in the following tables:

NUMBER OF CASES OF EACH TABULATED FORM OF TUBERCULOSIS

Tuberculosis of the respiratory system	8,458
Tuberculosis of the meninges, etc.	8
Tuberculosis of the intestines and peritoneum	33
Tuberculosis of the vertebral column	34

Tuberculosis of the joints	180
Tuberculosis of other organs	393
Total cases	9,106
SEX OF CASES OF TUBERCULOSIS, ALL FORMS	
Males	5,090
Females	4,016
Total cases	9,106

—Bulletin Boston Health Department.

ACTIVITIES OF THE MASSACHUSETTS BOARD OF REGISTRATION IN MEDICINE

The following circular is being sent throughout the state with the purpose of co-operating with rural communities in securing medical service:

April 9, 1926.

To The Chairman of Board of Health:

In order that each rural community in Massachusetts may obtain sufficient medical service, this Board is instituting a plan to make this more possible.

The Boards of Health in all towns and cities of Massachusetts, 5000 and under in population, may make this service available by signifying their desire to the Board of Registration in Medicine.

Each medical graduate, as he becomes registered by this Board, is to file a card in this office stating his probable future location, or his desire for one.

To those towns and cities which wish additional medical practitioners, the names and addresses of each of the registrants who desire locations, will be sent to the local Board of Health.

If you wish this service for your community, please sign the enclosed card and return to this office.

DR. FRANK M. VAUGHN, *Secretary*.

The cards filed by doctors and provided for Boards of Health are as follows:

PLEASE TYPEWRITE THIS RECORD

Date _____

Surname first—Write name in full _____

1. My probable location as a practitioner of medicine in Massachusetts _____
2. I would desire a location to practice medicine in Massachusetts _____

(This enables the Board to supply information to communities who wish additional medical practitioners.)

Date _____

Please send us until further notice, names and addresses of medical graduates registered by your Board, who desire location.

Chairman, Board of Health _____

City or Town _____

At the March meeting of the Board 78 applicants for registration as physicians were examined. 41 were rejected. This is an impressive demonstration of the poor average ability of applicants for registration in Massachusetts.

THE PRESENT STATUS OF THE USE OF ANTI-PNEUMOCOCCIC SERUM IN LOBAR PNEUMONIA

It is well known that lobar pneumonia in New York City, is generally due to pneumococci and that these pneumococci do not all belong to the same type. In about one-third of all the cases the Type I pneumococcus is the exciting factor, Type II is responsible for about a sixth of the total cases and Type III is the pathogenic cause of another sixth of the cases of lobar pneumonia. The remaining are caused by pneumococci other than those of Types I, II and III, and these are lumped together under the designation of Group IV. It must always be remembered that Group IV, sometimes incorrectly designated as Type IV, really embraces all the remaining types of pneumococci other than the first three dominant ones.

When a case of lobar pneumonia recovers by crisis it is found that just previous to the crisis the blood contains newly developed protective substances. If a little of such blood, along with a fatal dose of pneumococcus organisms of the same type as caused the pneumonia, be injected into a mouse, it will protect the animal from an otherwise fatal septicaemia. It has been found that horses also develop protective substances against the pneumococci. If, for instance, they are injected with repeated and increasing doses of Type I pneumococcus, their blood after a time, when tested out in animals, is found to contain a large amount of protective substances against the Type I pneumococcus.

This knowledge led to the attempted application of the serum as a therapeutic agent in lobar pneumonia. It is well known that when the blood of cases of severe lobar pneumonia is examined, a certain percentage contains living pneumococci and that the cases having pneumococci in their blood, as a rule, do badly. In fact few cases of lobar pneumonia die without a septicaemia being present.

It is found that when the serum of a horse which has been subjected to frequent intravenous injections of pneumococci, is injected into human beings suffering from lobar pneumonia, septicaemia rarely develops, providing the right type of anti-pneumococcic serum is used. To achieve this result, large amounts of serum are required, and doses of 100 cc. are given and repeated two or three times each day. The great drawback in this procedure is that the serum is usually potent for one type of pneumococcus only. It is true that if the three types are injected simultaneously into horses a few of them will develop a serum fairly potent

for all three types, but as a rule, horses do not withstand the injections of the three types as well as of a single type. Even when the three types are injected the potency of the serum for one type is apt to greatly exceed that for the other two types.

Up to the present time, we have usually had the unrefined monovalent serum. It can be readily seen that unless the pathogenic type of pneumococcus in the case is quickly ascertained, the serum treatment of pneumonia requires the giving of 300 cc. dosages of serum, 100 for each of the three major types. Even under these circumstances about 25% of the cases will remain unaffected because produced by pneumococci of Group IV. In practice Type I serum is used first and alone, both because the majority of cases of lobar pneumonia are caused by the Type I pneumococcus and also because the potency of Type I serum is as a rule higher than that of the other two types.

For a number of years efforts have been made to isolate the antibodies from the serum and to produce a pure solution of potent antibodies free of the other elements of the horse serum. At the present time there are two such practical antibody solutions produced, one by Hunton of Glenolden and one by Felton of Boston.

The Department of Health is sending considerable quantities of the different types of anti-pneumococcal serum to Dr. Felton who is working under Dr. Rosenau at Harvard University. There the serum is refined and used not only in New York, but also in Boston, Chicago and Pittsburgh. Results at the present time are fairly good but the intravenous injection of antibody solutions from certain batches of serum produce moderate chills. Felton hopes in the near future to get a uniform refined product which will have a high potency and produce no untoward results of any consequence.—*Bulletin Department of Health for New York City.*

RECENT DEATH

GOLDEN—DR. MICHAEL CHARLES GOLDEN, a graduate of the University of Vermont Medical Department in 1881, died at his home in Taunton, April 13, 1926.

Besides being a physician, he was active in many fields. He established and published the *Taunton Herald*, formed the People's Coal Company and was active in its management up to the time of his death; served for two years as manager of the municipal lighting plant, and was a candidate for Mayor of Taunton. Nathaniel J. W. Fish defeated him for the mayoralty by 483 votes.

Dr. Golden is survived by his widow, who was Miss Helen Gilmore of Raynham.

OBITUARY

JESSE LEONTI BLISS, M.D.

THE profession will be pained to learn that the Grim Reaper has removed from our midst

Dr. Jesse Leonti Bliss of Holyoke. He had been ill for two months with heart disease and arteriosclerosis; the end coming on April 11, 1926, at his home in Holyoke, where he had lived and practised for 30 years. Dr. Bliss was born at South Hadley Falls in 1870, the son of Mr. and Mrs. S. E. Bliss, the father having been postmaster at that town for a number of years. Jesse attended the South Hadley schools and Mt. Hermon School, likewise the Cornell Preparatory School and then entered the College of Physicians and Surgeons, Columbia University, New York, taking his M.D. there in 1896. The next year he settled in Holyoke and joined the Massachusetts Medical Society.

Dr. Bliss held the following positions: For several years he was assistant surgeon on the staff of the Providence Hospital. He was a member of the Holyoke Medical Association, the Massachusetts Medical Society and the American Medical Association. He also had been the corporation physician for the Holyoke Street Railway. He was a member of the Sons of St. George and of the First Congregational church. Recently he completed 25 years of service as the examiner of the Prudential Life Insurance Co. and was the guest of honor of the company at a dinner given by the officials at Springfield, when he was presented with a diamond ring and a medal commemorating his service to that company.

His passing will be mourned especially because of the spirit of friendliness which he coupled with his conscientious work. Quiet and retiring he endeared himself to the large number of people who came to know him, both in the profession and among the laity. Whenever there was a question concerning ethical procedure among his confreres Dr. Bliss could be counted on to stand up in meeting and speak his mind, thereby turning action into proper channels and satisfying all that the right thing was done.

He married Miss Ruth Hillick of Ithaca, N. Y. Three children were born to them, two boys, both of whom died, and a daughter, Susan E., a senior at Holyoke High School. He also leaves two sisters.

CORRESPONDENCE

CHANGES IN THE DEPARTMENT OF PUBLIC HEALTH

The Commonwealth of Massachusetts
Department of Public Health
State House, Boston

April 16, 1926.

Editor, Boston Medical and Surgical Journal:

May I announce through your columns the resignation of Dr. Sumner H. Remick as Director of the Division of Tuberculosis to take up clinical work in Cincinnati. His contributions toward the tuberculosis program during his stay in the Department have

been great. With Dr. Kelley he guided the legislation necessary for the reorganization of institutional service for children and non-pulmonary cases as well as developing with Dr. Chadwick the ten-year tuberculosis program in the schools. In his going the Department loses an admirable administrator and able clinician.

I would also like to announce Dr. Henry D. Chadwick, Superintendent of the Westfield State Sanatorium, as Acting Director of the Division to succeed Dr. Remick. Through his work at Westfield Dr. Chadwick has commanded the respect of the profession and through his development of the childhood tuberculosis program for the Department has shown his wide preventive medical vision. The Department and the State are indeed fortunate to have such a man to step into this important position.

Yours truly,

GEORGE H. BIGELOW, M.D.,
Commissioner of Public Health.

MASSACHUSETTS DEPARTMENT OF PUBLIC HEALTH

DISEASES REPORTED FOR THE WEEK ENDING APRIL 10, 1926

Anterior poliomyelitis	2	Ophthalmia neonatorum	22
Chickenpox	105	Pneumonia, lobar	252
Diphtheria	70	Scarlet fever	236
Dog-bite	10	Septic sore throat	1
Encephalitis lethargica	2	Suppurative conjunctivitis	5
Epidemic cerebrospinal meningitis	5	Syphilis	46
German measles	260	Trachoma	2
Gonorrhea	91	Tuberculosis, pulmonary	130
Influenza	236	Tuberculosis, other forms	23
Malaria	1	Tuberculosis, hilum	3
Measles	944	Typhoid fever	1
Mumps	106	Whooping cough	310

CONNECTICUT DEPARTMENT OF HEALTH

MORBIDITY REPORT FOR THE WEEK ENDING APRIL 10, 1926

Diphtheria	17	Chickenpox	35
Last week	14	Conjunctivitis, infectious	1
Diphtheria bacilli carriers	3	Encephalitis, epidemic	1
Whooping cough	68	German measles	14
Last week	53	Influenza	157
Scarlet fever	91	Mumps	16
Last week	99	Paratyphoid fever	1
Typhoid fever	1	Pneumonia, lobar	106
Last week	1	Tuberculosis, pulmonary	19
Measles	595	nary	1
Last week	502	Chancroid	31
Bronchopneumonia	89	Gonorrhea	41
Cerebrospinal meningitis	1	Syphilis	

NOTICES

INFORMATION DESIRED

We have a request from a physician for information as to how much glucose ought to be given a Marathon runner in order to supply the necessary blood sugar. If anybody will

furnish this information, we will be glad to send it on to the doctor who raises the question.

AMERICAN BOARD OF OTOLARYNGOLOGY

In addition to the examination held at Dallas on April 19th and at San Francisco on April 27th, another examination will be held at the Otolaryngological Clinic, Royal Victoria Hospital, Montreal, on Tuesday, June 1st.

Information may be secured from the Secretary, Dr. H. W. Loeb, 1402 South Grand Boulevard, St. Louis, Missouri.

WHO IS THIS MAN?

We have been informed that a man is coming to Boston and giving treatments by colonic irrigations. We have been unable to ascertain his name but accounts indicate that he is very irregular in his methods.

Some person here persuades people to employ him and when a group can be corralled the alleged doctor comes and flushes the bowels of the patients with sea water and then departs.

Any information relative to this person will be of interest.

REPORTS AND NOTICES OF MEETINGS

MASSACHUSETTS SOCIETY OF EXAMINING PHYSICIANS

The annual meeting of the Massachusetts Society of Examining Physicians will be held at the Copley Plaza Hotel, Thursday, April 29, 6:30 P. M. Election of Officers.

Speakers: Dr. Isador H. Coriat: "Recent Conceptions of the So-Called 'Traumatic Neuroses'." Discussion by Drs. Edward B. Lane and Harold G. Giddings.

Dr. James P. O'Hare: "Hypertension." Discussion opened by Dr. Cadis Phipps.

Arthur K. Reading, Esq., District Attorney, Middlesex County: "Crime and Automobiles."

WILLIAM J. BRICKLEY, M.D., *Pres.*

WILLIAM PEARCE COUES, M.D., *Sec'y.*

HARVARD MEDICAL SOCIETY

The next regular meeting of the Harvard Medical Society will be held as usual in the amphitheatre of the Peter Bent Brigham Hospital, April 27, 1926, at 8:15 P. M. A program will be announced later.

S. A. LEVINE, *Secretary.*

THE BOSTON DISPENSARY

25 Bennet Street

A MEETING of the Clinical Staff of the Boston Dispensary will be held Friday, April 23rd, at 1:00 P. M.

Dr. George H. Bigelow, Commissioner of Public Health, State House, Boston, Mass., will

speak on the subject: "Health Examinations."

You are cordially invited to be present and to join in the discussion.

B. E. Wood, M.D., *Secretary*,

ESSEX NORTH DISTRICT MEDICAL SOCIETY

CENSORS' MEETING

The censors of the Essex North District Medical Society will meet for the examination of candidates at the Hotel Bartlett, 53 Main St., Haverhill, Mass., (Telephone 8710) Thursday, May 6, 1926, at 2 o'clock sharp.

Candidates should make personal application to the secretary and present their medical diploma at least one week before the examination.

J. FORREST BURNHAM, *Secretary*.
567 Haverhill St., Lawrence, Mass.

SUFFOLK DISTRICT MEDICAL SOCIETY

CENSORS' MEETING

The censors of the Suffolk District Medical Society will meet for the examination of candidates at the Medical Library, No. 8 The Fenway, Thursday, May 6, 1926, at 4:00 o'clock.

Candidates should make personal application to the secretary and present their medical diploma at least one week before the examination.

ARTHUR H. CROSBIE, *Secretary*.
520 Commonwealth Avenue, Boston.

ESSEX SOUTH DISTRICT MEDICAL SOCIETY

THURSDAY, May 6. Censors meet at Salem Hospital at 3:30 P. M. Candidates for examination should present their diplomas to the Secretary at once.

Tuesday, May 11. Annual meeting at The Tavern, Gloucester. Dinner at 6:30 P. M.

Dr. Leo M. Davidoff will give an illustrated talk on "A Trip to the Far North with Mac-Millan."

Lady guests of members invited.

R. E. STONE, *Secretary*.
221 Cabot St., Beverly, Mass.

THE CUTTER LECTURE ON PREVENTIVE MEDICINE

SIR ARTHUR NEWSHOLME, K.C.B., M.D., F.R.C.P., late Principal Medical Officer of the Local Government Board of England and Wales; sometime Lecturer on Public Health Administration, School of Hygiene and Public Health, Johns Hopkins University, will deliver the Cutter Lectures at the Harvard Medical School, Amphitheatre Building E, 5 P. M., Mon-

day, April 26, 1926, and Tuesday, April 27, 1926.

The title of the first lecture is: The Present Position of the Tuberculosis Problem. The second lecture will discuss the Remaining Problems in Maternity and Child Welfare.

These lectures are given annually under the terms of a bequest from John Clarence Cutter, whose will provided that the lectures so given should be styled the Cutter Lectures on Preventive Medicine and that they should be delivered in Boston and be free to the medical profession and the press.

The medical profession, medical and public health students, the press and others interested are cordially invited to attend.

THE NORFOLK DISTRICT MEDICAL SOCIETY

The Board of Censors of the Norfolk District Medical Society will hold a meeting for the examination of applicants for membership in the Massachusetts Medical Society at Roxbury Masonic Temple, 171 Warren St., on Thursday, May 6, at 4 P. M.

N.B.—Candidates must present their diplomas for examination by the Censors.

It has come to the attention of the Secretary of the Norfolk District that the names of some of its members who regularly pay their dues to the District Treasurer are not on the Secretary's mailing list.

If Fellows who do not receive notices of meetings will communicate this fact to the Secretary the matter will be given immediate attention.

FRANK S. CRUICKSHANK, M.D., *Sec.*,
23 Bay State Road.

TRUDEAU SOCIETY

The next meeting of The Trudeau Society of Boston will be held on May 11, 1926, at 8:15 p. m., in Sprague Hall, The Medical Library, 8 The Fenway, Boston, Mass.

The paper will be by Dr. Edward O. Otis. Subject—Symptomatic Treatment of Tuberculosis.

An active discussion is promised.

Physicians, Medical Students and Nurses are cordially invited.

GEORGE S. HILL, *Secretary*.

ALL PHYSICIANS INVITED TO ATTEND THE OPENING OF LAKEVILLE STATE SANATORIUM FOR CASES OF NON-PULMONARY TUBERCULOSIS

The State Department of Public Health announces that on Tuesday, April 27th, there will

be a formal opening of the Lakeville State Sanatorium as an institution given over exclusively to the care of non-pulmonary tuberculosis. It is expected that His Excellency Governor Alvan T. Fuller will be present. Other speakers will be Dr. Linsly R. Williams of the National Tuberculosis Association on "National Aspects of the Tuberculosis Program"; Dr. Vincent Y. Bowditch on "Landmarks in the State's Care of the Tuberculous"; Dr. James S. Stone, President, Massachusetts Medical Society, on "Non-Pulmonary Tuberculosis and the Profession"; Dr. Kendall Emerson, President, Massachusetts Tuberculosis League, on "Non-Pulmonary Tuberculosis and the Public"; Dr. Leon A. Alley, Superintendent, Lakeville State Sanatorium, on the services offered at Lakeville. A buffet lunch will be served from one to two o'clock, and the formal exercises will begin at three.

All physicians are cordially invited to attend these exercises which mark a significant advance in the service offered by the State to the tuberculous patient. It is requested that those planning to come inform the Department of Public Health, State House, Boston, indicating their method of transportation in order that adequate facilities may be available.

A train will leave Boston at 1:30 P. M., arriving at Middleborough at 2:31 P. M. Returning, a train will leave Middleborough at 4:45 P. M., arriving at Boston at 6:06 P. M., and another will leave Middleborough at 5:48 P. M., arriving at Boston at 6:50 P. M.

Special bus service will leave Copley Square in front of the Copley Plaza Hotel at 11 A. M. and return from Middleborough so as to arrive in Boston about 6:30 P. M.

The institution is reached from Boston by road through Mattapan, Blue Hill Avenue to Ponkapoag, to Stoughton, then the Taunton Road to West Bridgewater, and to Middleborough, the institution being located about one mile out of Middleborough on the New Bedford road.

SOCIETY MEETINGS DISTRICT MEDICAL SOCIETIES

Bristol South District Medical Society
May 6, 1924—Annual meeting at New Bedford Public Library, 6 P. M.

Essex South District Medical Society
Thursday, May 6—Censors meet at Salem Hospital, 3:30 P. M.
Tuesday, May 11—The Tavern, Gloucester. Annual meeting speaker to be announced.

Essex District Medical Society
May 12, 1924—The annual meeting at the Anna Jaques Hospital, Newburyport.

Middlesex East District Society
May—Annual meeting, Colonial Inn, North Reading. Speaker, Dr. E. H. Place. Subject to be announced.

Suffolk District Medical Society
April 28—At 8:15 P. M. Annual meeting. Election of officers. "Some Diagnostic, Prognostic and Therapeutic Aspects of Disorders of the Blood," Drs. George R. Minot, Cyrus C. Sturge, and Raphael Isaacs.

Notice of meetings must reach the JOURNAL office on the Friday preceding the date of issue in which they are to appear.

BOOK REVIEWS

Textbook of Human Embryology. By DR. H. K. CORNING, Basel. München: J. F. Bergmann, 1925.

The first edition of this now standard textbook of human embryology, ready for the press at the outbreak of the World War, was published in 1921, and was reviewed with commendation in the JOURNAL. In this second edition are numerous elaborations and changes, and the number of illustrations has been increased to 694, of which 100 are colored. These constitute a notable and valuable part of the book. The text is clear and admirably arranged, and each chapter is followed by an elaborate literature index. This volume ranks with the leading textbooks of the subject.

Buchanan's Text-Book of Forensic Medicine and Toxicology. 9th edition. Revised and enlarged. By JOHN E. W. MACFALL, M.D., D.P.H. (Liverpool.) 431 pp. William Wood & Company.

This book is of little value or interest to American readers, as it is entirely based on English law. The chapters on toxicology, while useful, are not of sufficient value to offset the portion of the book devoted to British medicolegal procedures. To one interested in comparing forensic medicine in this country and England the volume would be of considerable value.

Otitic Affections of the Brain, Meninges, and Bloodvessels. By O. KÖRNER, ROSTOCK, and K. GRÜNBERG, Bonn. München: J. F. Bergmann, 1925.

This monograph is published as the third in Körner's series of Modern Otology and its Borderland Subjects. Four previous editions, appearing before the World War, were favorably reviewed in the JOURNAL. This fifth edition has been completely revised from the standpoint of a decade of progress in histologic and experimental pathology. The work is illustrated with four graphic tables, and with two text-figures and two full page engravings of pathologic brain sections.

The Therapy of Puerperal Fever. By DR. ROBERT KOEHLER, Vienna. American Edition by HUGO EHRENFEST, M.D., F.A.C.S., St. Louis. St. Louis: The C. N. Mosby Company, 1925.

This translation of Koehler's monograph, dealing with the prophylaxis and therapy of puerperal infection, aims to present to American obstetricians the clinical conclusions derived by the author from the material under his observation as assistant on Halban's service in Vienna. Besides the various medical and sur-

gical procedures, he considers the more modern methods of mercurochrome injection vaccines, and serotherapy. The book is illustrated with twenty-six temperature charts and one full-page anatomic representation of discontinuous thrombosis. There is also a most exhaustive classified bibliography of approximately a thousand titles covering the entire literature of the subject.

It is interesting to note that of the methods of treatment chiefly relied upon in American practise, the ice-bag, ergot and pituitrin, are not mentioned, catharsis is disapproved, and Fowler's postural drainage is considered only after surgical intervention.

Ears and the Man. Studies in Social Work for the Deafened. By ANNETTA W. PECK, ESTELLE E. SAMUELSON and ANN LEBINAN, with an introduction by WENDELL C. PHILLIPS, M.D., President-Elect of the American Medical Association. F. A. Davis, \$2.00.

Ears and the Man is a distinct contribution to another field of Social Work written jointly by three Social Workers, themselves deafened. The introduction of the book alone by Dr. Phillips, an eminent otologist, would have constituted an impressive and stirring appeal to his own profession which neither Social Workers nor laymen reading it could fail to heed.

The saving of untold mental and spiritual wretchedness to those who lose their hearing, the prevention of their estrangement from the Hearing World, as well as their fullest "rehabilitation" is the subject of their appeal and sympathetic presentation the practical solution of the many difficult problems that beset the Deafened, the self re-education to the new and unaccustomed handicap, especially difficult when deafness befalls one in adult life, is graphically and instructively described and illustrated by social case records. These are particularly well presented, and illustrate in a telling way the psychological problems that confront a deafened person, and the re-education necessary to straighten out his relationship to life and to other people.

No mention is made of the work of the best Schools for the Deaf nor the clear cut position adopted by the most eminent educators of the Deaf. There is a certain bias which is generated by the same circumstances that make them such good missionaries for their particular cause.

Abdominal Operations. By SIR BERKELEY MOYNIHAN, K.C.M.G., C.B., Leeds, England. Fourth edition, revised. Two volumes totaling 1217 pages with 470 illustrations. W. B. Saunders Co., Philadelphia and London, 1926.

This new edition of Moynihan's well known two volume work on surgery of the abdomen has been practically rewritten. Moynihan has

earned a most enviable reputation for himself in this country largely through the merits of this excellent book which has been widely used since its first appearance in 1905.

The limitation of its scope to abdominal operations exclusive of herniae and gynaecological and urinary tract conditions makes it possible to give a thorough discussion of the other organs. One phase which this edition considers in most careful detail is general surgical technique including preparation of the patient, routine of asepsis, methods of making and closing incisions, and drainage. After treatment and all possible complications are ably presented. One possible criticism is that some subjects are mentioned in different chapters in a very similar manner and space is thus occupied that might well be given to a more thorough discussion of other important questions that are considered rather briefly. Similarly one feels that considerable space has been given to operations that are very rarely indicated while some more common conditions might be presented in greater detail.

The surgery of the stomach and intestines is thoroughly discussed and the technique of the operations carefully explained and well illustrated. The operations upon the liver, pancreas, and spleen comprise the greater part of the second volume. In descriptions of operations reference is made to the original articles and occasionally quotations are used. Tabulations of cases are also given especially to show the results of various methods of treatment.

In brief, Moynihan's "Abdominal Operations" may well be classed as the standard work in its field.

Individual Gymnastics. A Handbook of Corrective and Remedial Gymnastics. By LILLIAN CURTIS DREW. Third Edition, thoroughly revised. Lea & Febiger, Philadelphia and New York, 1926.

The revision of Miss Drew's book "Individual Gymnastics" has increased the value of this excellent hand book. The scope, aims and limitations of both remedial and corrective gymnastics are well outlined.

Under the heading of "Examinations," the advantages of the schematograph and silhouette both for diagnosis and comparison are illustrated. The group tests and posture grading which she describes seem excellent methods of stimulating interest in body mechanics. Typical exercises are placed under three headings of "Body Freeing," "Body Building," and "Body Poisoning," and excellent suggestions are made for special work in muscle training for cases of scoliosis and infantile paralysis. A new chapter on corrective exercises to be taken in groups should prove very helpful.